SUPPLEMENTAL TRAINING MATERIAL

Figure 1. Helicopter armament subsystem: XM16, mounted on the UH-1B helicopter.

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1. TABULATED DATA.

a. 7.62mm machinegun M60C:

(1)	Weight (4 machineguns) . .	83 lb
(2)	Length (including flash suppressor)	43.5 in
(3)	Rate of fire	550 rd per min (approx)
(4)	Range (max).	(Refer to FT 7.62-A-2)

b. 7.62mm machinegun mount: Left-hand or right-hand mount assembly:

(1)	Weight (2 mount assemblies, including 4 cylinder assemblies (charger) and 4 cartridge drives)	133.2 lb
(2)	Elevation (max)	160.0 mils (+9°)
(3)	Depression (max)	1,173.3 mils (-66°)
(4)	Traverse:	
	(a) Inboard (max)	213.3 mils (12°)
	(b) Outboard (max)	1,244.5 mils (70°)

c. Cylinder assembly (charger):

(1)	Type	hydraulic
(2)	Operating pressure	1,000 $\pm$ 50 PSI

d. Ammunition chute links: Total links per subsystem - 602:

(1)	184 for 2 ammunition chutes, right-hand, 7792347-5 (cartridge drive to ammunition box, 92 links for each chute)	

(2) 196 for 2 ammunition chute assemblies, left-hand, 7792347-6 (cartridge drive to ammunition box, 98 links for each chute)

(3) 115 for ammunition chute assembly, left-hand, 7792469 (guns to cartridge drives)
Composed of: 1 ammunition chute 7792346-2, lower gun (73 links)
1 ammunition chute 7792346-3, upper gun (42 links)

(4) 107 for ammunition chute assembly, right-hand, 7792470 (guns to cartridge drives)
Composed of: 1 ammunition chute 7792346-1, lower gun (65 links)
1 ammunition chute 7792346-3, upper gun (42 links)

(5) Weight (8 ammunition chutes) - 30.6 lb

e. Ammunition box assemblies:

(1) Number required 12

(2) Capacity. . . . . 6,000 rd (500 rd per box)

f. Control box panel: Weight
(1 required) . . . . . 5.25 lb

g. Sighting station (MG):

(1) Type of sight . . . . . Reflex

(2) Weight . . . . . 9.0 lb

(3) Elevation (max) . . . . . 160.0 mils (+9°)

(4) Depression (max) . . . . . 1,173.3 mils (-66°)

(5) Traverse:

(a) Right (max). . . . . 1,244.5 mils (70°)

(b) Left (max) . . . . . 1,244.5 mils (70°)

h. Sighting station rocket launcher:

(1) Type of sight . . . . . Infinity reflex XM60

(2) Weight . . . . . 6.0 lb

i. Rocket launcher:

(1) Launcher elevation or depression - manual while helicopter is on the ground (for adjustment).

(2) Launcher elevation or depression limits - ±88.9 mils (6°).

2. DESCRIPTION.

a. The armament subsystem, helicopter, 7.62mm machinegun, 2.75-inch rocket launcher, XM16 (fig 1), is designed for use on the UH-1B helicopters.

b. The fixed 7.62mm machineguns M60CA1 (fig 2) are air-cooled, gas-operated, belt-fed, fully automatic weapons. The ammunition chutes are attached to the left side of the receivers on the magazine brackets. The machineguns have fixed headspace and quick-change barrels. Charging of the weapon is done by the charger, which is attached to the cocking handle of the weapon by the connector on the rear end of the piston. The weapon may be cocked by manually retracting the cocking handle. The weapons are fired electrically from the sighting station or cyclic stick in the cockpit through a solenoid on the guns, which replaces the trigger group on the weapon.

c. Refer to TM 9-1005-243-12 for a description of the machinegun mount components.

d. In addition to the pylon and four 7.62mm machineguns, two rocket launcher rack and support assembles (fig 2 and 3), one for each side of the helicopter, mount on the external stores support assemblies. The rack and support assemblies each hold one 2.75-inch rocket launcher XM157 (fig 2 and 3). The launchers XM157 hold seven 2.75-inch rockets. Electrical firing of the rockets is accomplished through the intervalometer control panel, located on the console in the cockpit. The XM157 rocket launchers can be jettisoned either electrically or manually by the pilot.

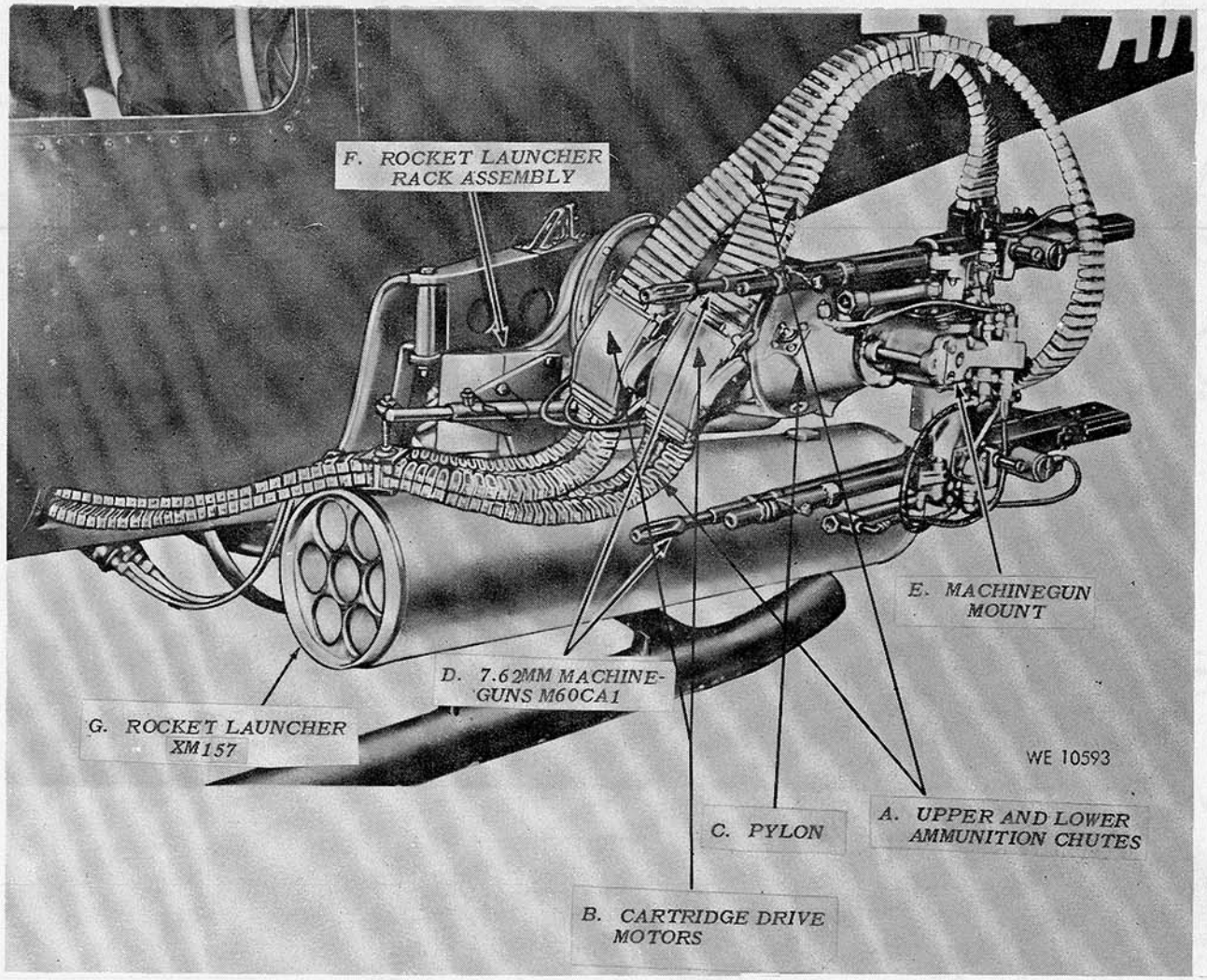


Figure 2. Components of XM16 subsystem mounted on UH-1B helicopter.

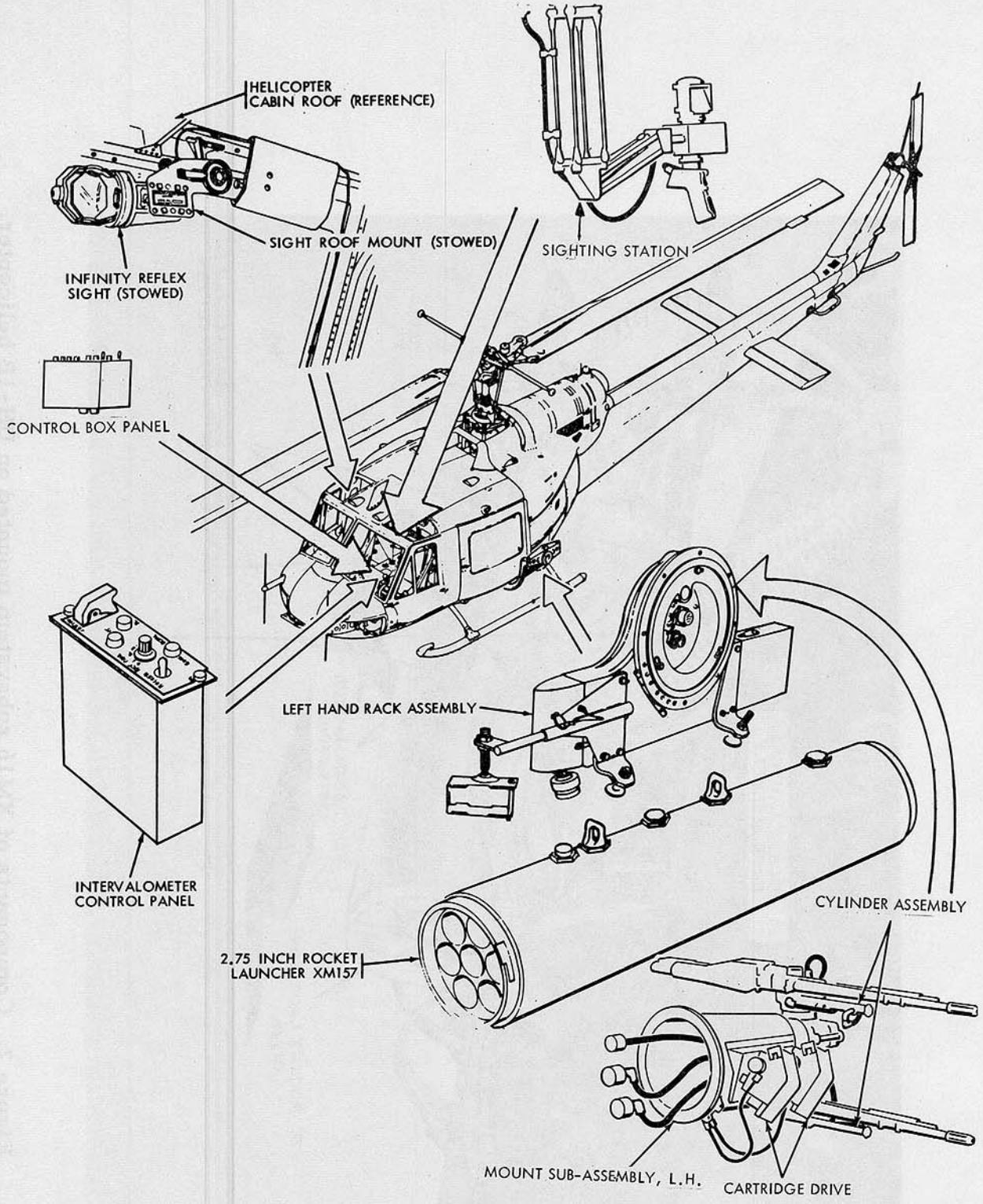


Figure 3. Components of 2.75-inch rocket launcher portion of subsystem XM16 located on UH-1B helicopter—left front view.

e. Refer to TM 9-1090-201-35 for a description of the rocket launcher and rack assembly.

f. Figure 2 shows the location of the 7.62mm machinegun - 2.75-inch rocket launcher helicopter armament subsystem XM16, left side shown. Ammunition chutes (A) from ammunition boxes located in cargo compartment of the helicopter hook up to the cartridge drive motors (B), on the pylon (C), and to the machineguns (D). The pylon contains the necessary components for positioning the machineguns in elevation and deflection and is constructed to accommodate two M60CA1 machineguns (E). The machineguns are fired electrically from inside the helicopter.

g. Located on the external stores is the rack and support assembly (F) to which the pylon (C) is mounted. Suspended beneath and to the rack and support assembly is the 2.75-inch rocket launcher XM157 (G). The rockets are fired electrically from inside the helicopter.

3. MAJOR COMPONENTS.

a. Sighting station M6 and M16 (fig 4 and 5).

(1) Figure 4 shows the sighting station (A) and its location in the helicopter. It is mounted on the left side of the helicopter to the top of the cockpit and forward of the copilot and is used to remotely fire the machineguns. The command potentiometers in the sighting station produce electrical signals as the sight is moved in elevation and deflection. These signals are amplified in the control box and then applied to the servomechanisms located in their pylon.

(2) The controls and devices located on the controller head (A) and grip assembly of the sighting station are used to position and fire the machineguns. They are:

(a) Two deflection command variable resistors located top and bottom on left side of the controller head (1).

(b) The elevation and depression command variable resistor, which is gang tuned on a single shaft on the right side of the controller head (2).

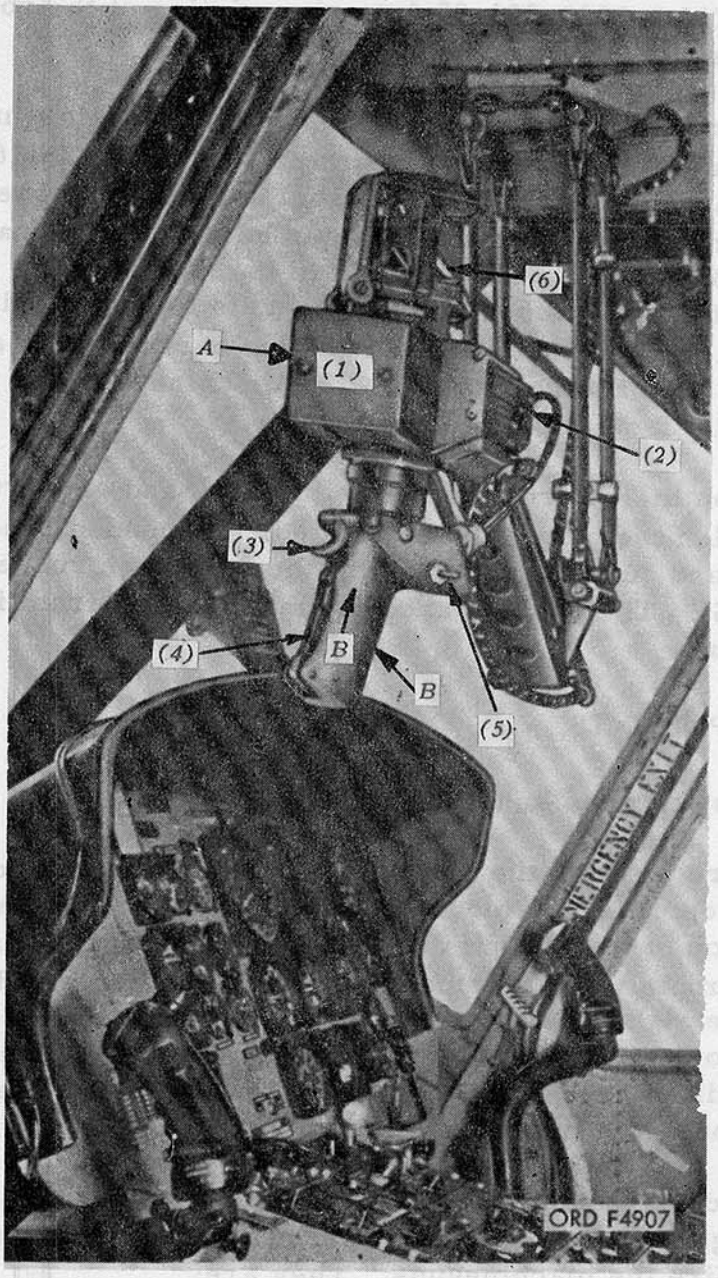


Figure 4. Sighting station installed in helicopter.

(c) The grip assembly (B) contains the trigger switch (3), the deadman switch (4), and the lamp reticle switch (5). The grip assembly also contains the reticle lamp, which projects the reticle image on the lens of the N8A reflex sight (6), when tracking targets with the right.

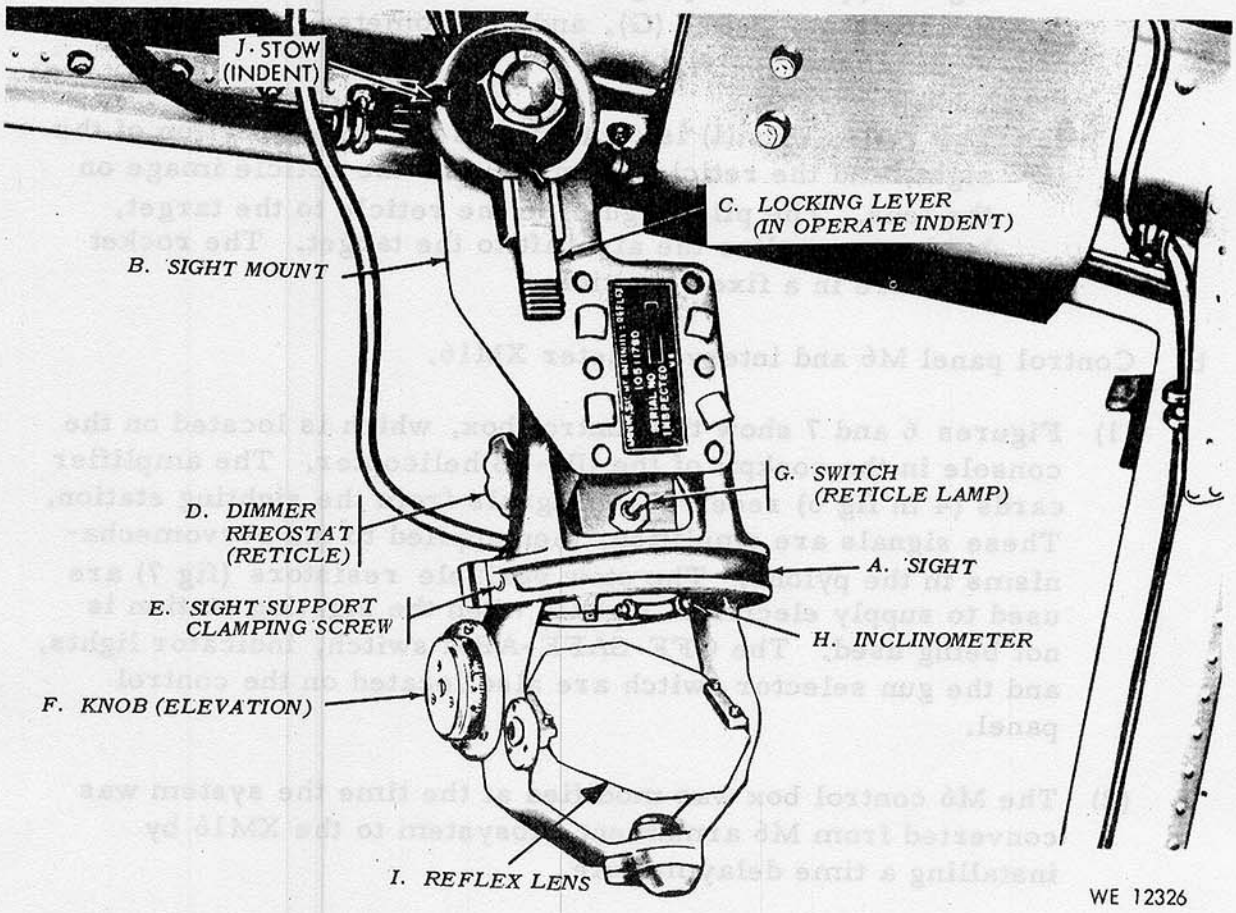


Figure 5. Infinity sight XM60 installed—operating position—left rear view.

(3) Figure 5 shows the infinity sight XM60 (A) and the infinity sight mount (B) and its location in the helicopter. The infinity sight XM60, when not in use by the pilot, may be stowed up and out of the pilot's way by pressing the locking lever (C) and swinging up until locking lever enters stow indent (J).

(a) The infinity mount XM60 is mounted on the top right side of the cockpit.

(b) The infinity sight XM60 is attached to the mount by four bolts and nuts. It contains the dimmer rheostat (D), sight support clamping screw (E), elevation knob (F), reticle lamp switch (G), and inclinometer (H), which is used to level the sight.

(c) The reflex lens (I) is contained in the lower portion of the sight, and the reticle lamp reflects the reticle image on the lens. The pilot sights on the reticle to the target, but he must aline the aircraft to the target. The rocket pads are in a fixed position.

b. Control panel M6 and intervalometer XM16.

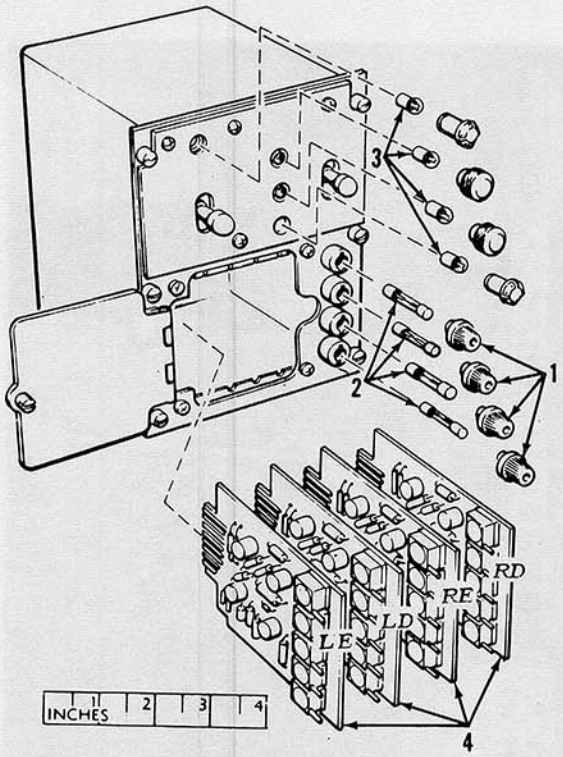
(1) Figures 6 and 7 show the control box, which is located on the console in the cockpit of the UH-1B helicopter. The amplifier cards (4 in fig 6) receive the signals from the sighting station. These signals are amplified, then applied to the servomechanisms in the pylons. The stow variable resistors (fig 7) are used to supply electrical signals when the sighting station is not being used. The OFF-SAFE-ARM switch, indicator lights, and the gun selector switch are also located on the control panel.

(2) The M6 control box was modified at the time the system was converted from M6 armament subsystem to the XM16 by installing a time delay module.

(3) The intervalometer (fig 8) is installed on the console in the cockpit above the M6 control box. From the intervalometer control panel, the pilot controls the firing of the rockets. The rockets are selected in pairs, 1 through 7. With the rockets/guns switch set in guns position, only the 7.62mm machineguns can be fired. With the switch set on rockets, the guns may be fired until the pilot squeezes the cyclic stick trigger, the guns are taken out, and the rockets will fire as selected. The guns can be fired again as soon as the pilot releases the cyclic stick trigger. The copilot or gunner then controls the guns from the M6 sighting station. The pods may be jettisoned either electrically or manually if the need for jettison should arise.

c. Ammunition feed system.

(1) Ammunition chutes.



1. Subassembly knob
   1005-973-2473
2. Cartridge fuse
   1005-972-8124
3. Incandescant lamp
   6240-155-7836
4. Electronic control amplifier (card)
   1005-086-8325

LE - Left elevation
LD - Left deflection
RE - Right elevation
RD - Right deflection

Figure 6. Control box panel 1005-086-8325— partial exploded view.

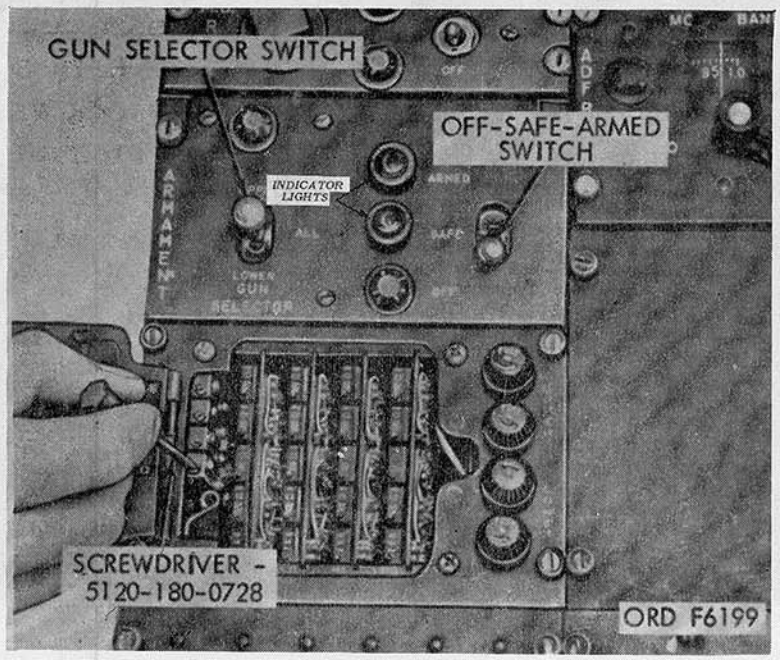


Figure 7. Adjusting deflection/elevation stow variable resistor.

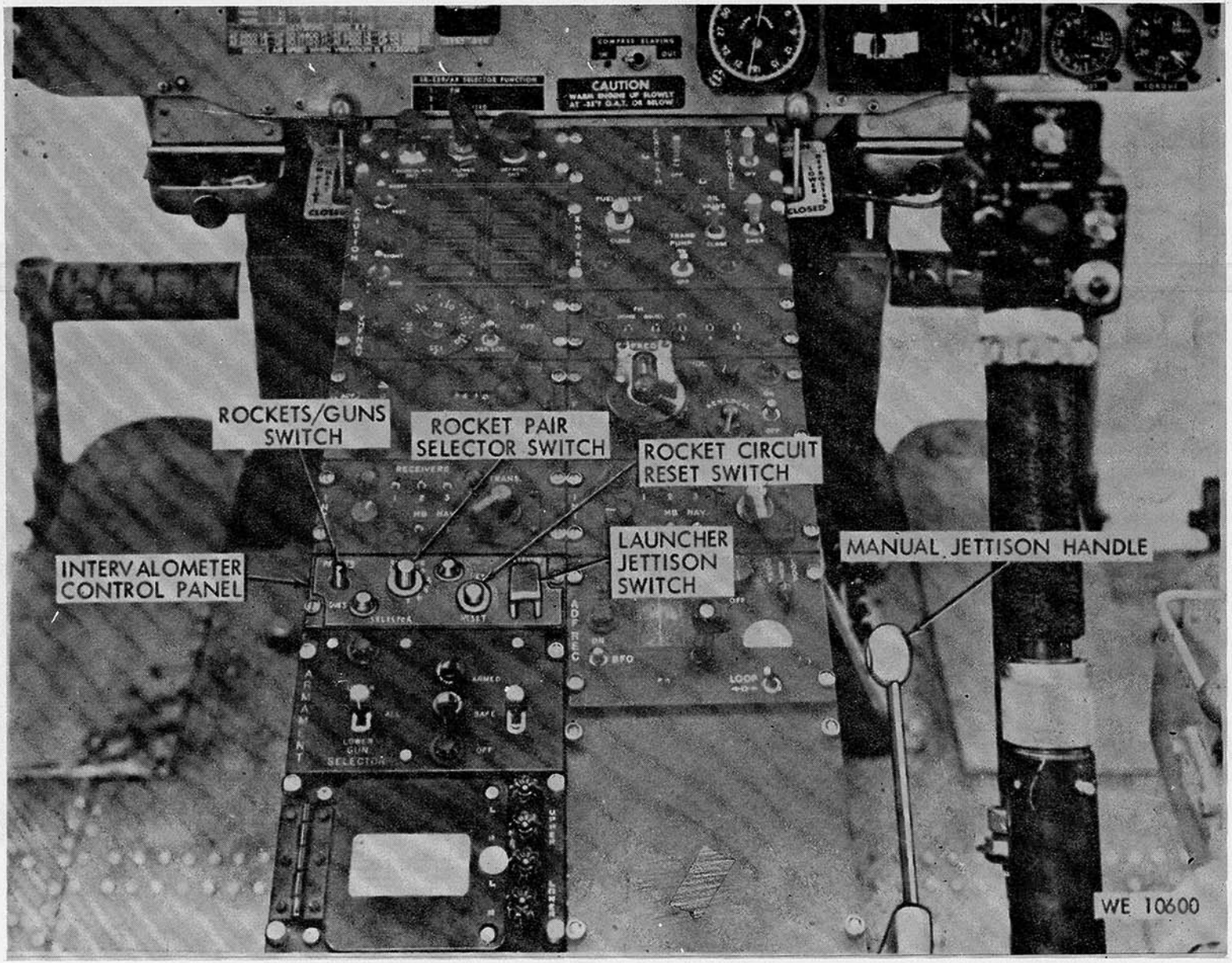


Figure 8. Intervalometer installed.

(2) Components of the ammunition feed system are as follows (fig 9 thru 14):

(a) Ammunition chute adapter 1005-973-2475 - connects ammunition chute to lower left M60C machinegun.

(b) Ammunition chute adapter 1005-973-2474 - connects ammunition chutes to upper left, upper right, and lower right M60C machineguns.

(c) Box end fitting 1005-972-8127 - connects ammunition chutes to the ammunition boxes and the upper end of the cartridge drive motors.

(d) Gun end fitting 1005-972-8128 - connects ammunition chute links to ammunition chute adapters.

(e) Booster end fitting 1005-972-8125 - connects ammunition chutes to lower end of cartridge drive motors.

(f) Ammunition chute link 1005-972-8126 - comprises the ammunition chutes.

(g) Clamp assembly 1005-974-3868 - clamps chute assemblies together.

(3) Figure 10 shows the location of ammunition boxes in the cargo compartment of the UH-1B helicopter. There are a total of twelve boxes, three in a row for each machinegun. Each box holds 500 rounds of 7.62mm ammunition. The first two rows forward feed the left guns, and the last two rows feed the right guns. These are in addition to the 500 rounds in the ammunition boxes, approximately 200 rounds in each of the four chutes, giving the total ammunition capacity of 6,800 rounds.

d. Pylon. The pylon provides a flexible mount for the machineguns and internally contains the necessary electronic, mechanical, and hydraulic function to traverse and depress the guns.

(1) Hydraulic charger assembly. Figure 15 shows the hydraulic charger assembly located on the pylon. It is used to charge and arm the M60C machineguns.

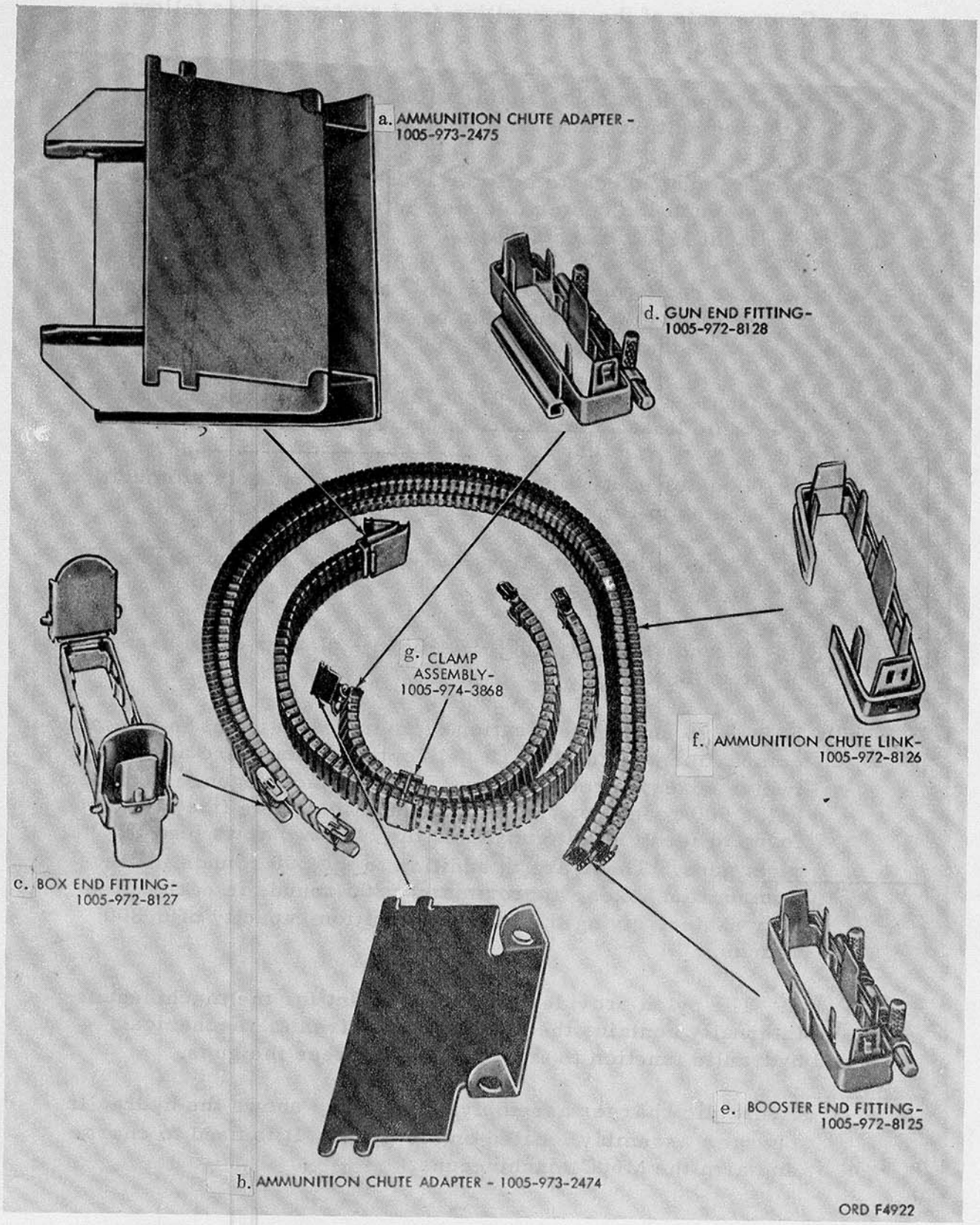

a. AMMUNITION CHUTE ADAPTER - 1005-973-2475
d. GUN END FITTING- 1005-972-8128
g. CLAMP ASSEMBLY- 1005-974-3868
f. AMMUNITION CHUTE LINK- 1005-972-8126
c. BOX END FITTING- 1005-972-8127
e. BOOSTER END FITTING- 1005-972-8125
b. AMMUNITION CHUTE ADAPTER - 1005-973-2474
ORD F4922

Figure 9. Ammunition chute components—partial exploded view.

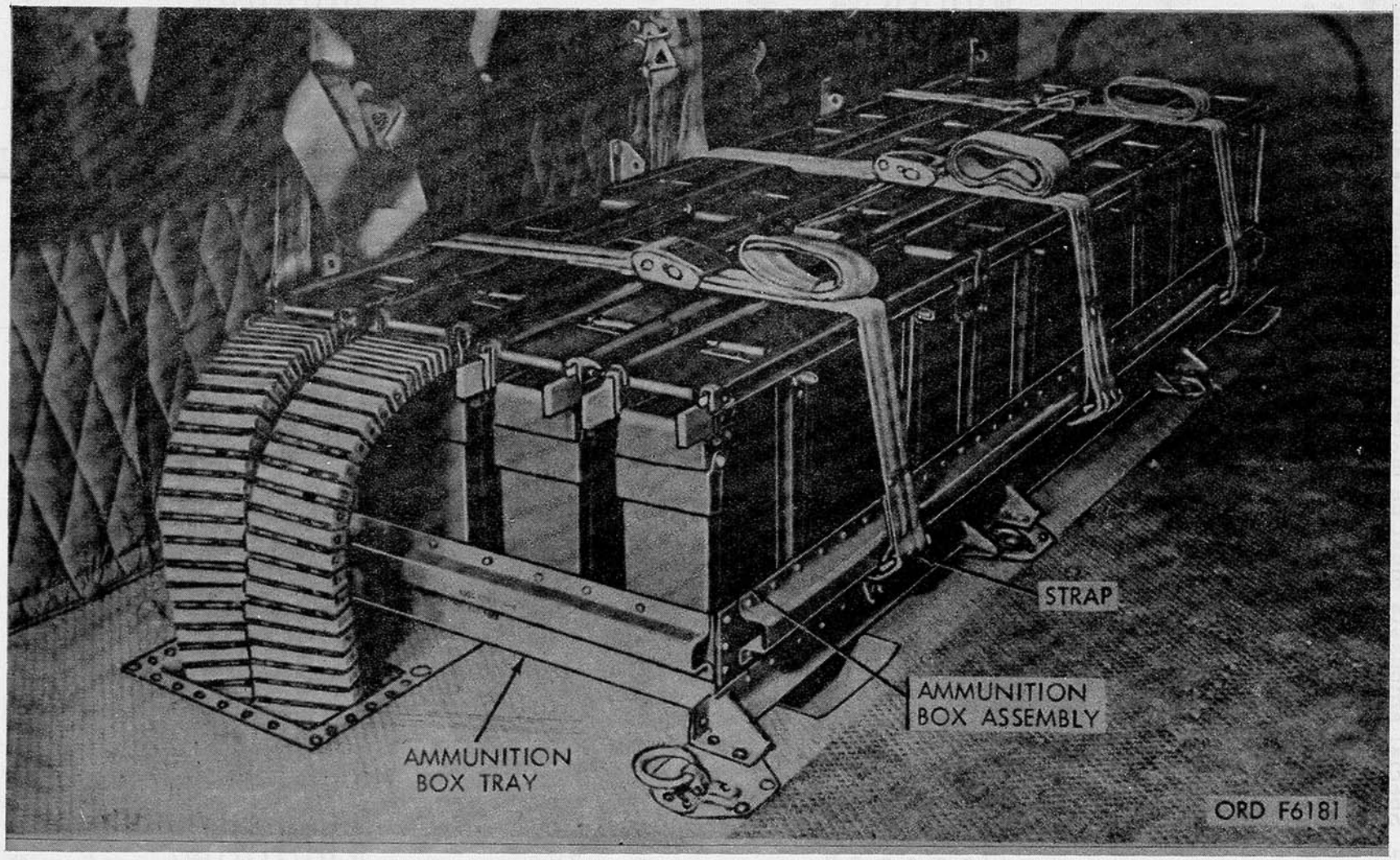


Figure 10. Ammunition box assemblies installed on cargo deck of UH-1B helicopter—right side view.

Note. - Special emphasis must be placed on the loading of ammunition into the ammunition boxes. Figures 11 and 12 show in detail the proper positioning of ammunition in the container in order to insure a proper feed through the ammunition chutes to the machineguns.

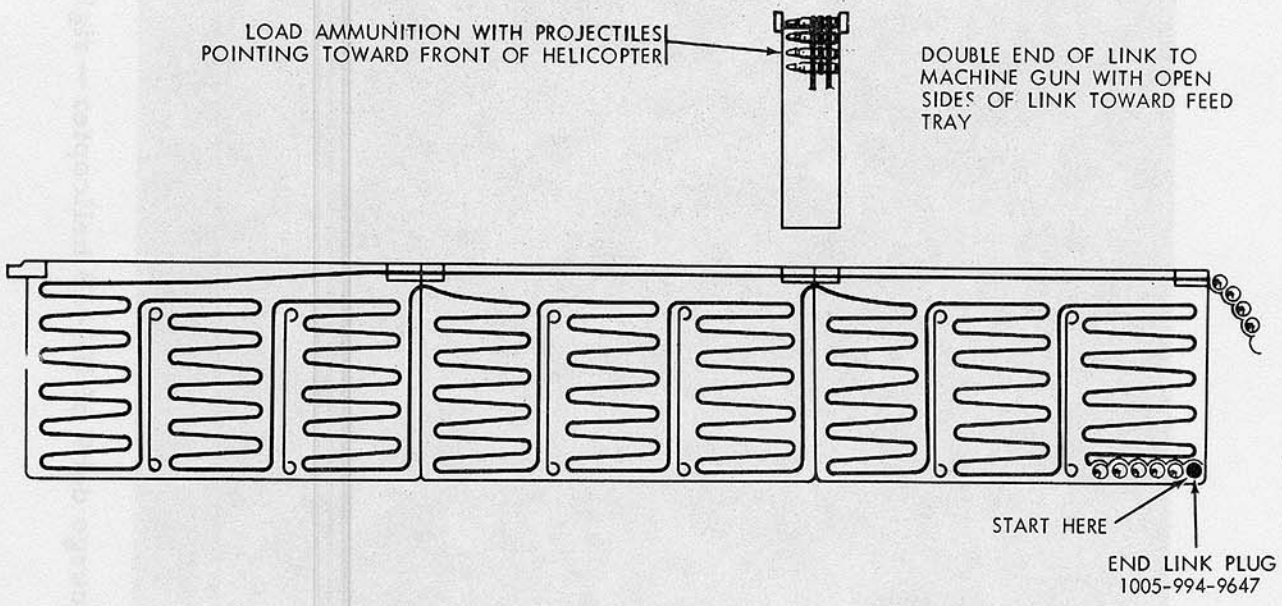

LOAD AMMUNITION WITH PROJECTILES POINTING TOWARD FRONT OF HELICOPTER
DOUBLE END OF LINK TO MACHINE GUN WITH OPEN SIDES OF LINK TOWARD FEED TRAY
START HERE
END LINK PLUG
1005-994-9647

Figure 11. Cartridges loaded in ammunition box assemblies—left side feed.

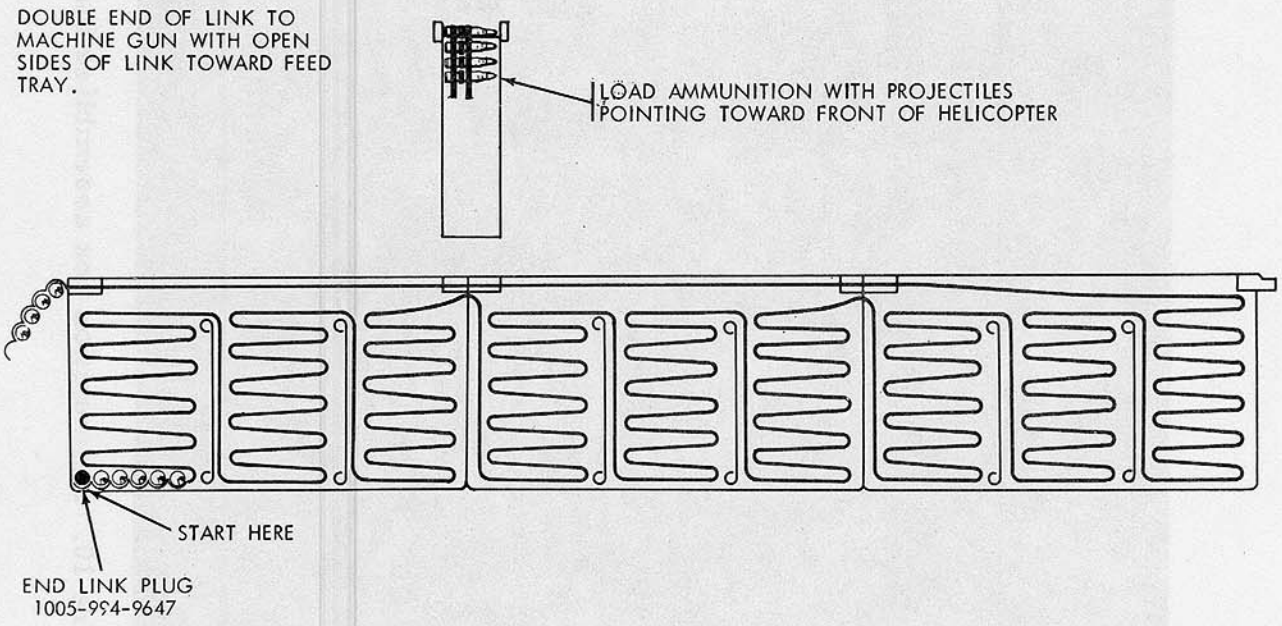

DOUBLE END OF LINK TO MACHINE GUN WITH OPEN SIDES OF LINK TOWARD FEED TRAY.
LOAD AMMUNITION WITH PROJECTILES POINTING TOWARD FRONT OF HELICOPTER
START HERE
END LINK PLUG
1005-994-9647

Figure 12. Cartridges loaded in ammunition box assemblies—right side feed.

Note. - Figures 13 and 14 show the connection of the ammunition chutes to and from the cartridge drive motors. These motors are used to pull the ammunition from the boxes, then feed it to the machine-guns.

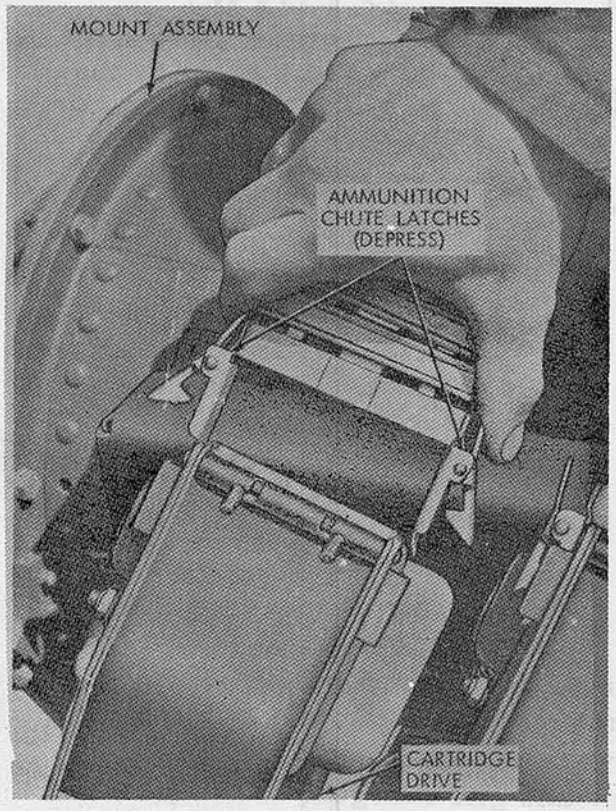


Figure 13. Connecting or disconnecting ammunition chute to top of cartridge drive.

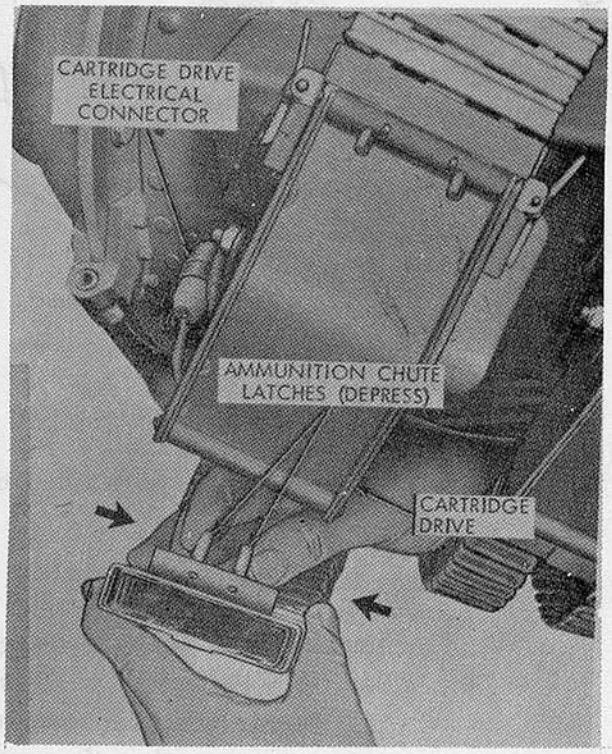


Figure 14. Connecting or disconnecting ammunition chute to bottom of cartridge drive.

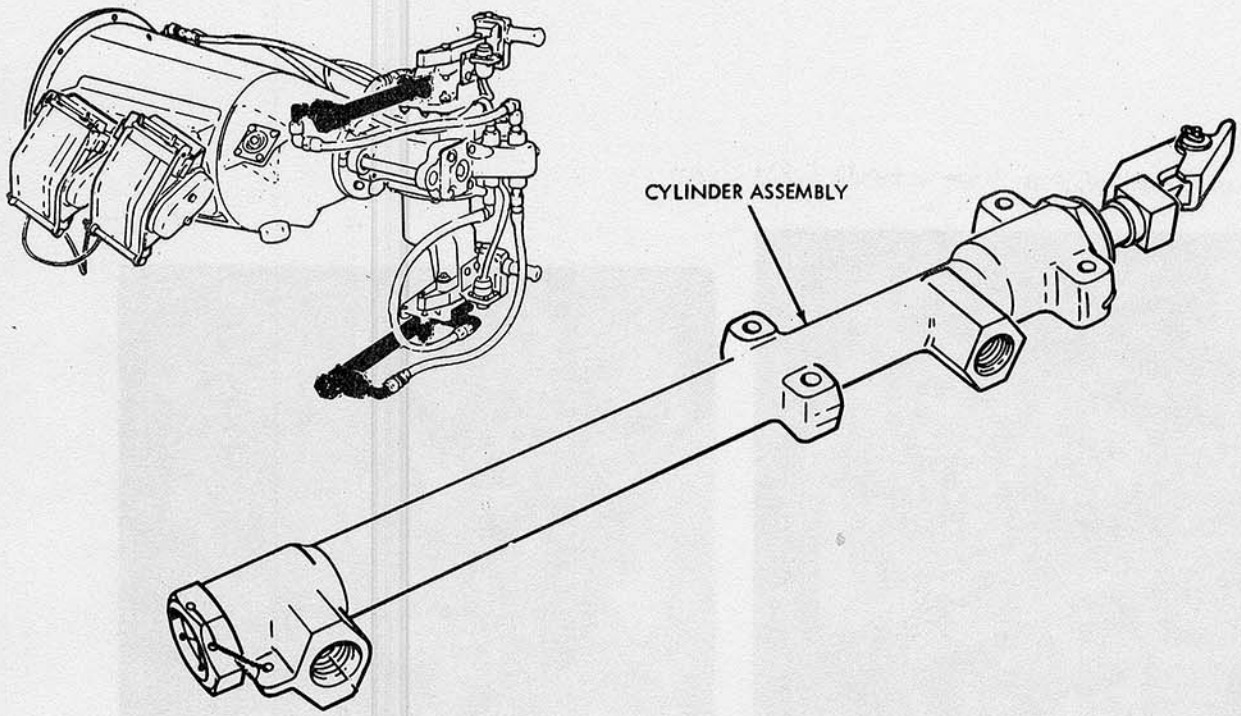


Figure 15. Hydraulic charger assembly.

(2) Internal components.

(a) Figure 16 shows the internal components of the pylon, which are used for movement of the 7.62mm machineguns. The hydraulic motors have interconnecting hydraulic lines connecting the motor and gun charger. The hydraulic motor operates the gear train, which, in turn, operates the gun mount. A servo valve is connected to the hydraulic motor (comprises one complete unit). The servo valve receives the electrical signals that are amplified in the amplifier cards. These signals to the servo valve control the movement of the guns and determine to which side of the motor the hydraulic fluid is pumped.

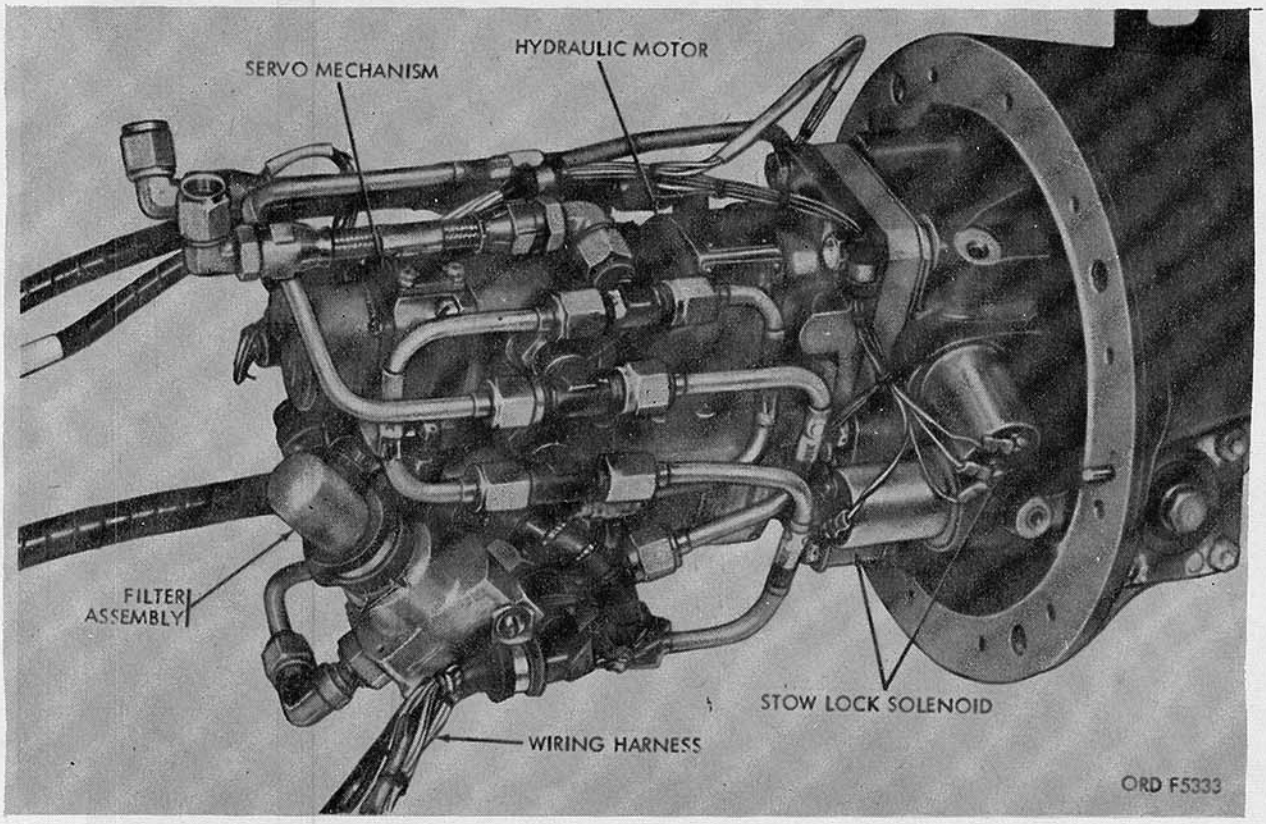


Figure 16. Hydraulic drive group.

(b) The elevation variable resistor (followup potentiometer) (fig 17) is mounted inside the pylons and the deflection variable resistor (followup potentiometer) (fig 18) is mounted externally, or outside the pylon. They comprise the feedback network of the servosystem utilized in operation of the gun mounts in the M16 armament subsystem. They can also be adjusted to change the position of the machineguns, but these adjustments are made only during boresighting of the subsystems.

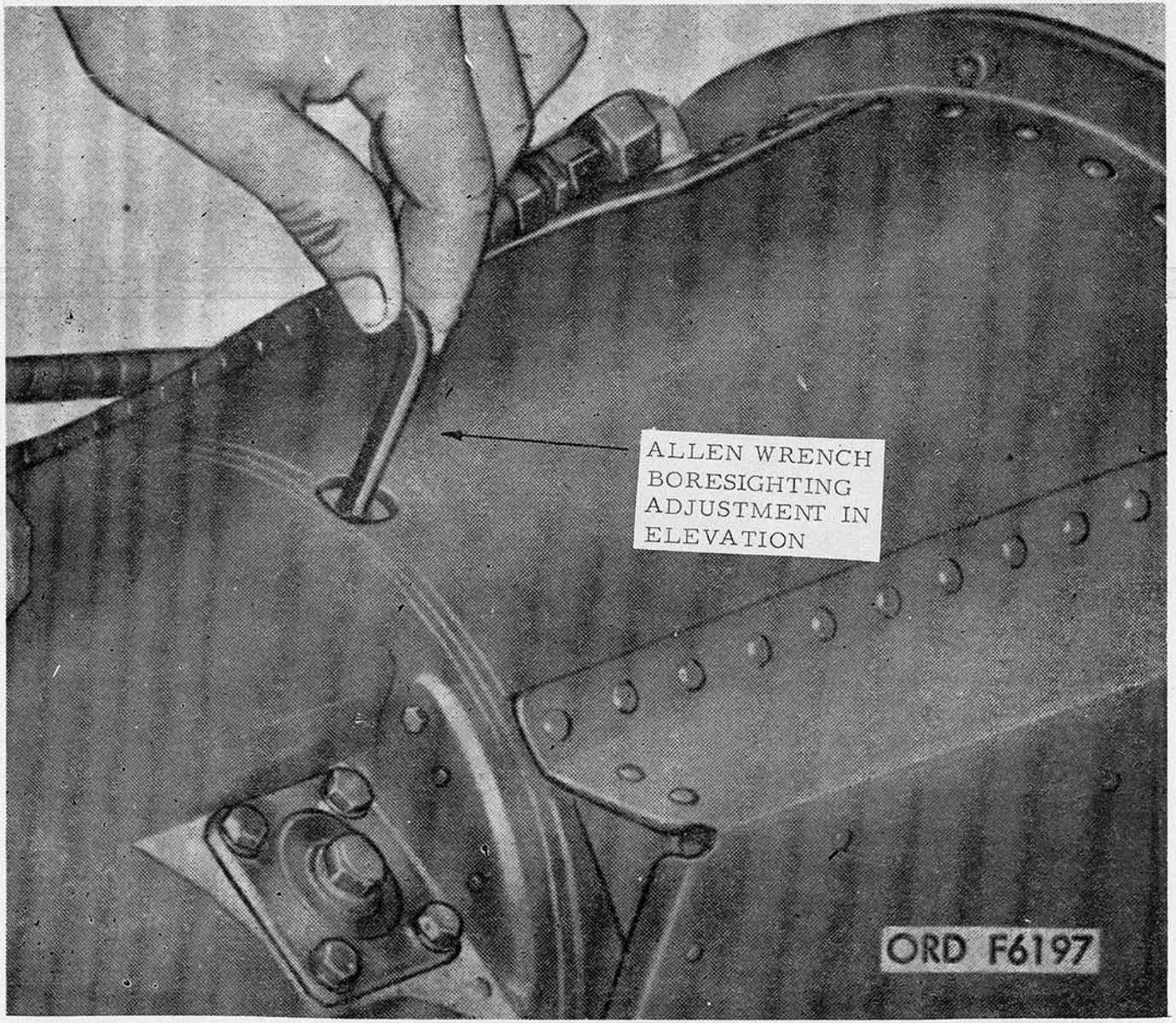


Figure 17. Adjusting elevation variable resistor.

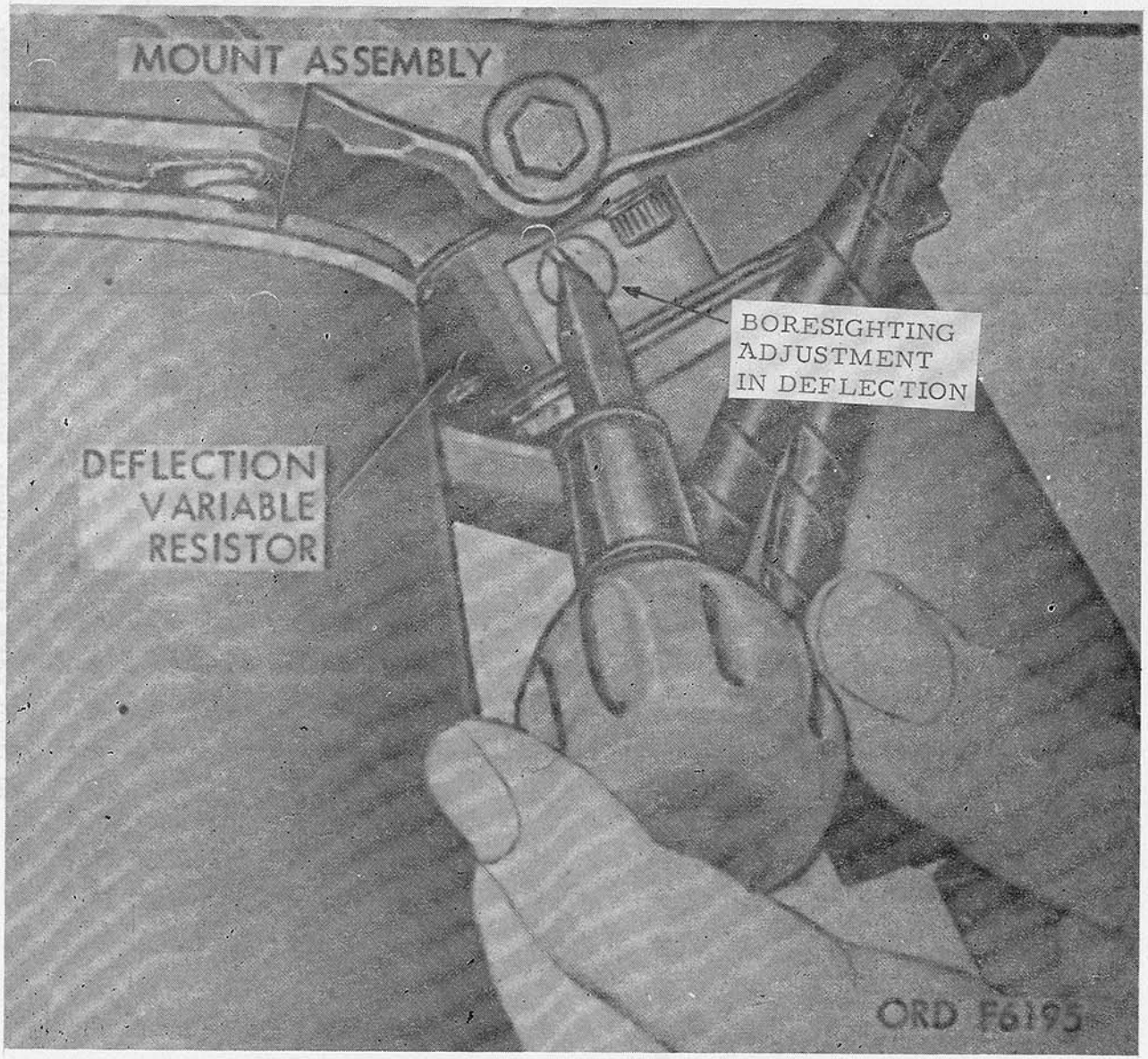


Figure 18. Adjusting deflection variable resistor.

e. Rack and launcher.

(1) Figure 19 shows the M16 bomb rack mounted on the helicopter external stores. The machinegun pylons are mounted to the M16 bomb rack. The modification, MWO 9-1005-243-3014, 11 October 65, converts the armament subsystem M6 to the 2.75-inch rocket launcher subsystem XM16 and requires 32.0 man-hours per subsystem. The category of maintenance is direct support and is applied by the Aircraft Armament Repairman, MOS 45J20.

(2) The 2.75-inch rocket launcher XM157, shown in figure 20, is used with the XM16 subsystem. Should any portion of the launcher's interior or exterior become damaged, the complete launcher XM157 must be replaced. If the XM157 launcher is not available, the XM158 launcher (a tube cluster of seven) may be used.

4. AMMUNITION (FIG 21).

a. Description.

(1) General. The 2.75-inch limited spin folding fin aerial rocket is designed for use with the M16 helicopter armament subsystem.

(2) 2.75-inch LSFFAR.

(a) The 2.75-inch LSFFAR is used against personnel and other soft targets.

(b) A complete round consists of:

1. Acceleration arming impact firing nose fuze, mark 176.

2. High-explosive warhead loaded with 1.4 pounds of HBX explosive.

3. Rocket motor consisting of a motor tube, constructed of light gage aluminum, containing a solid propellant, ignitor, and nozzle plate with folding fins attached.

(c) The complete round is 48 inches long and weighs 18 pounds.

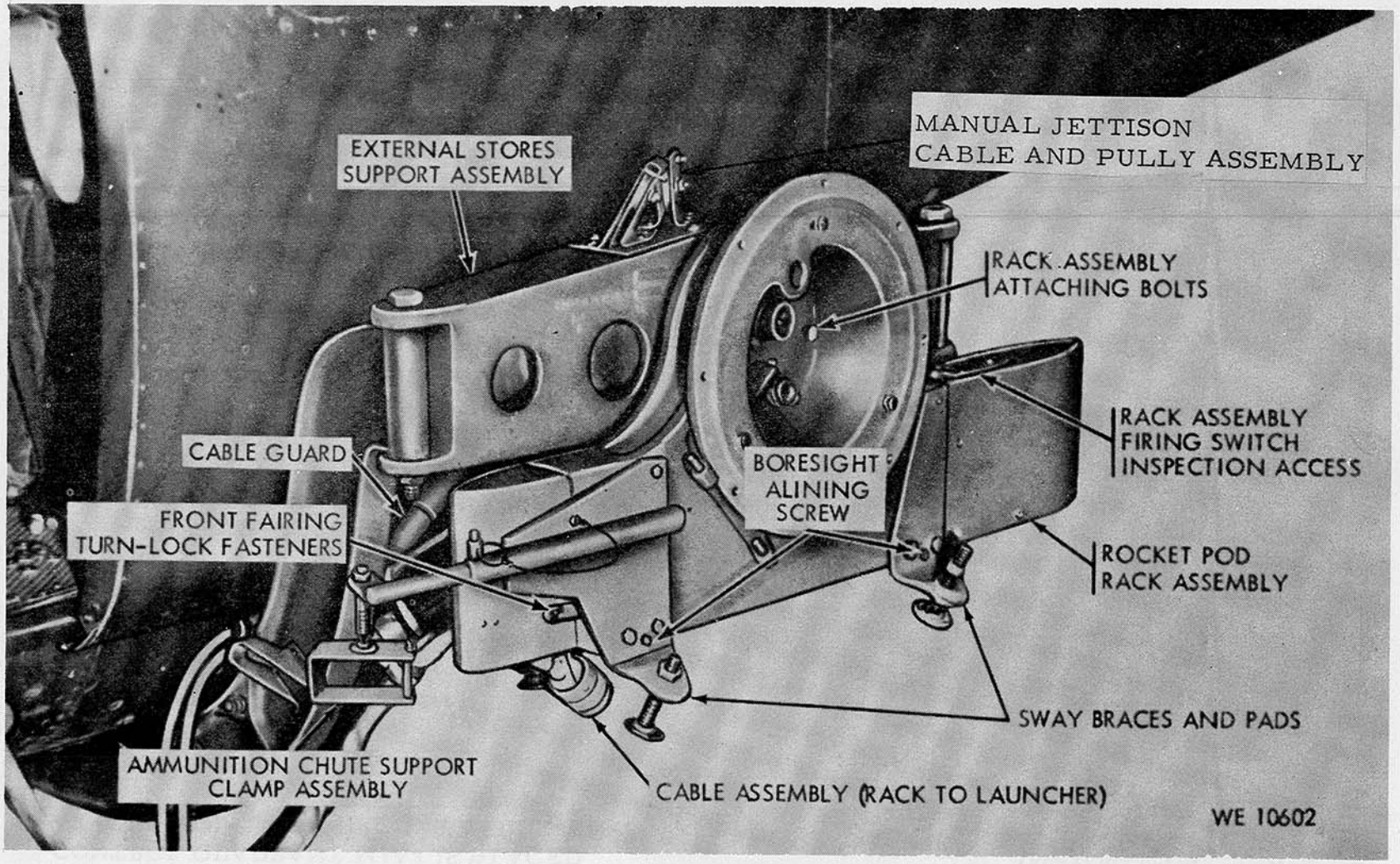


Figure 19. Rack and support assembly installed on external stores support assembly--left side of subsystem shown.

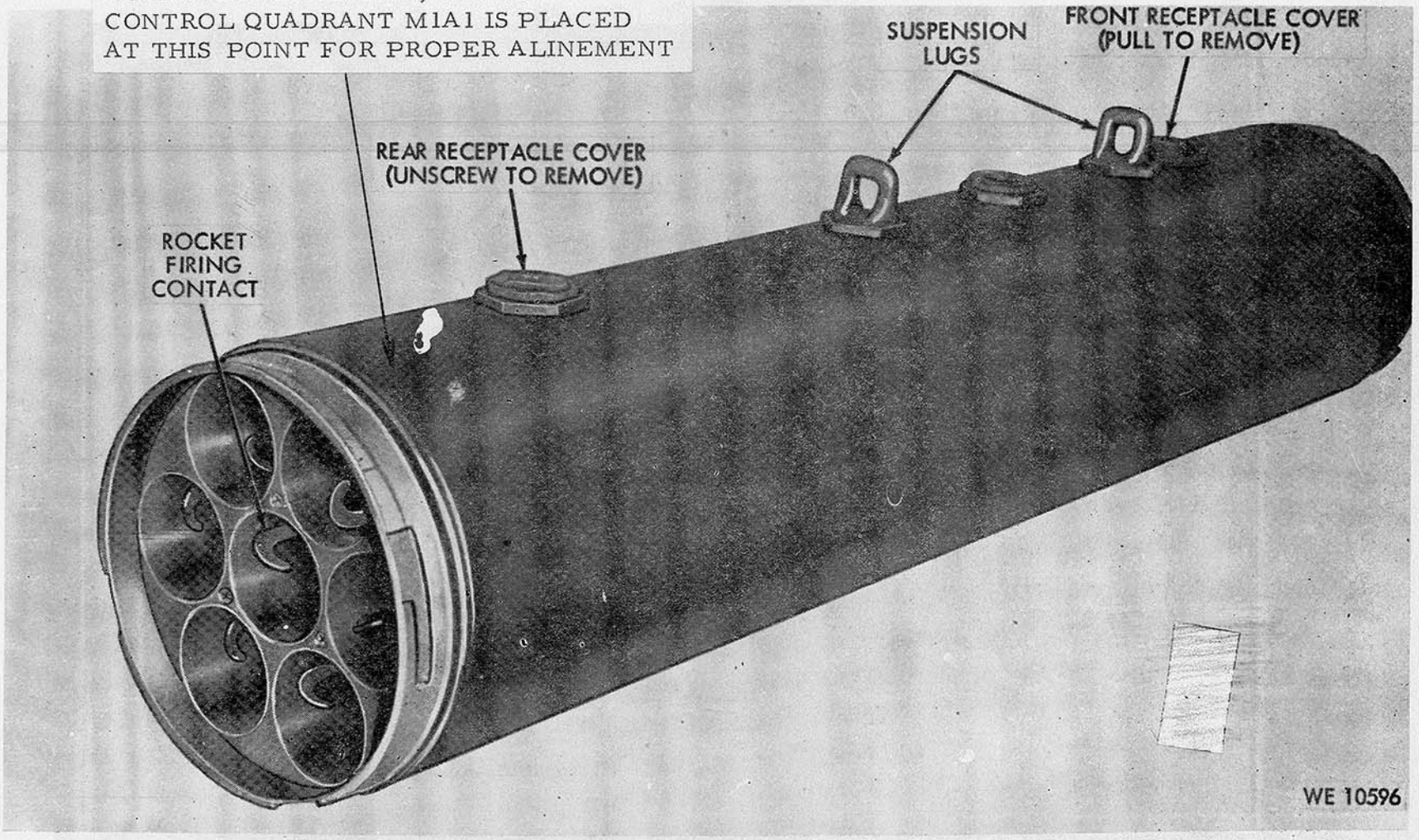

DURING BORESIGHTING, A FIRE CONTROL QUADRANT M1A1 IS PLACED AT THIS POINT FOR PROPER ALINEMENT
SUSPENSION LUGS
FRONT RECEPTACLE COVER (PULL TO REMOVE)
REAR RECEPTACLE COVER (UNSCREW TO REMOVE)
ROCKET FIRING CONTACT
WE 10596

Figure 20. 2.75-inch rocket launcher XM157—right rear view.

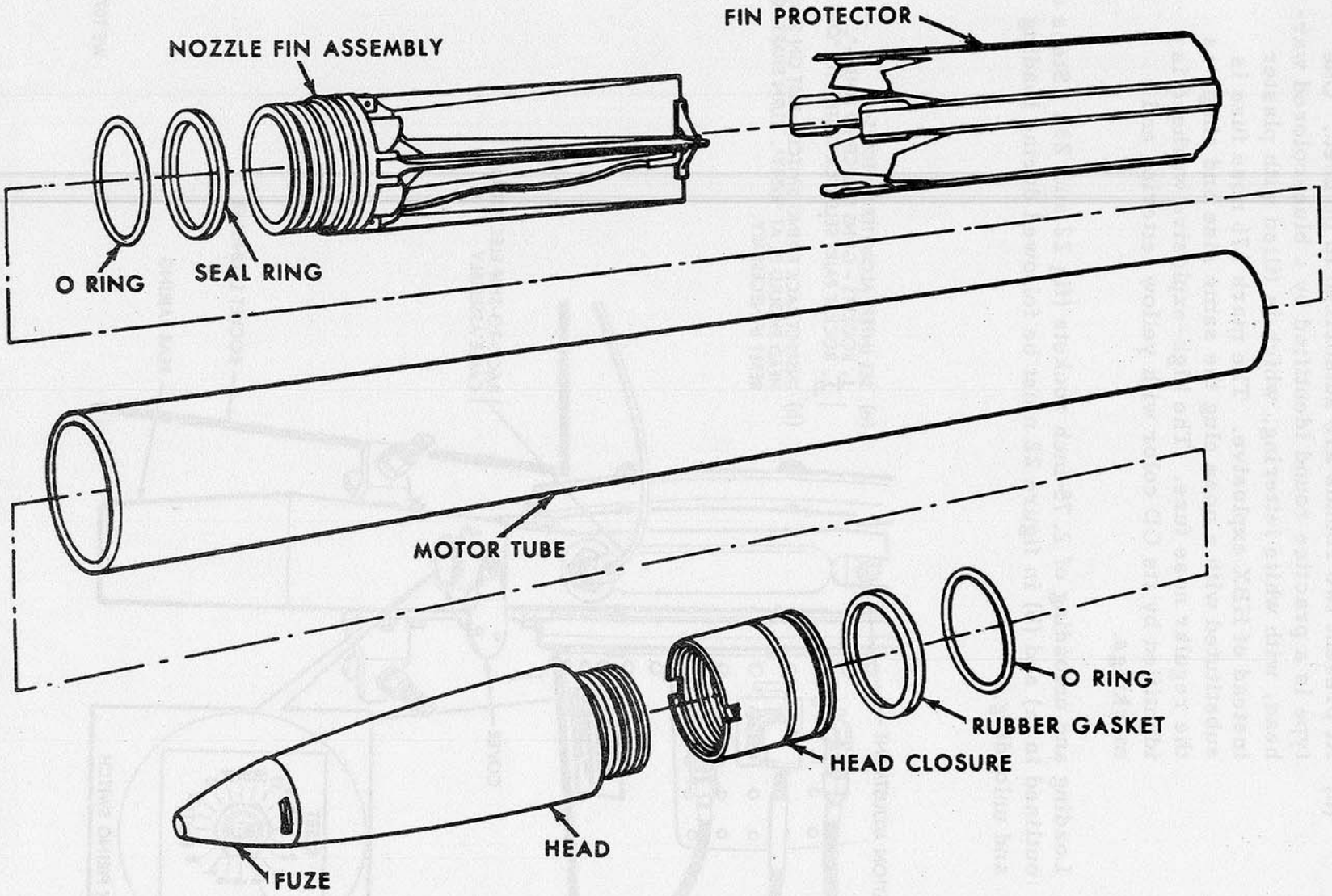


Figure 21. 2.75-inch rocket.

(d) At present two rounds are authorized to be used. One type is a practice round identified by a blue-colored warhead, with white lettering, which is filled with plaster instead of HBX explosive. The mark 176 nose fuze is substituted with a nose plug the same size and shape as the regular nose fuze. The high-explosive warhead is identified by its OD color with yellow lettering and markings.

b. Loading and unloading of 2.75-inch rockets (fig 22 and 23). Steps as outlined in (a) and (b) in figure 22 must be followed during loading and unloading.

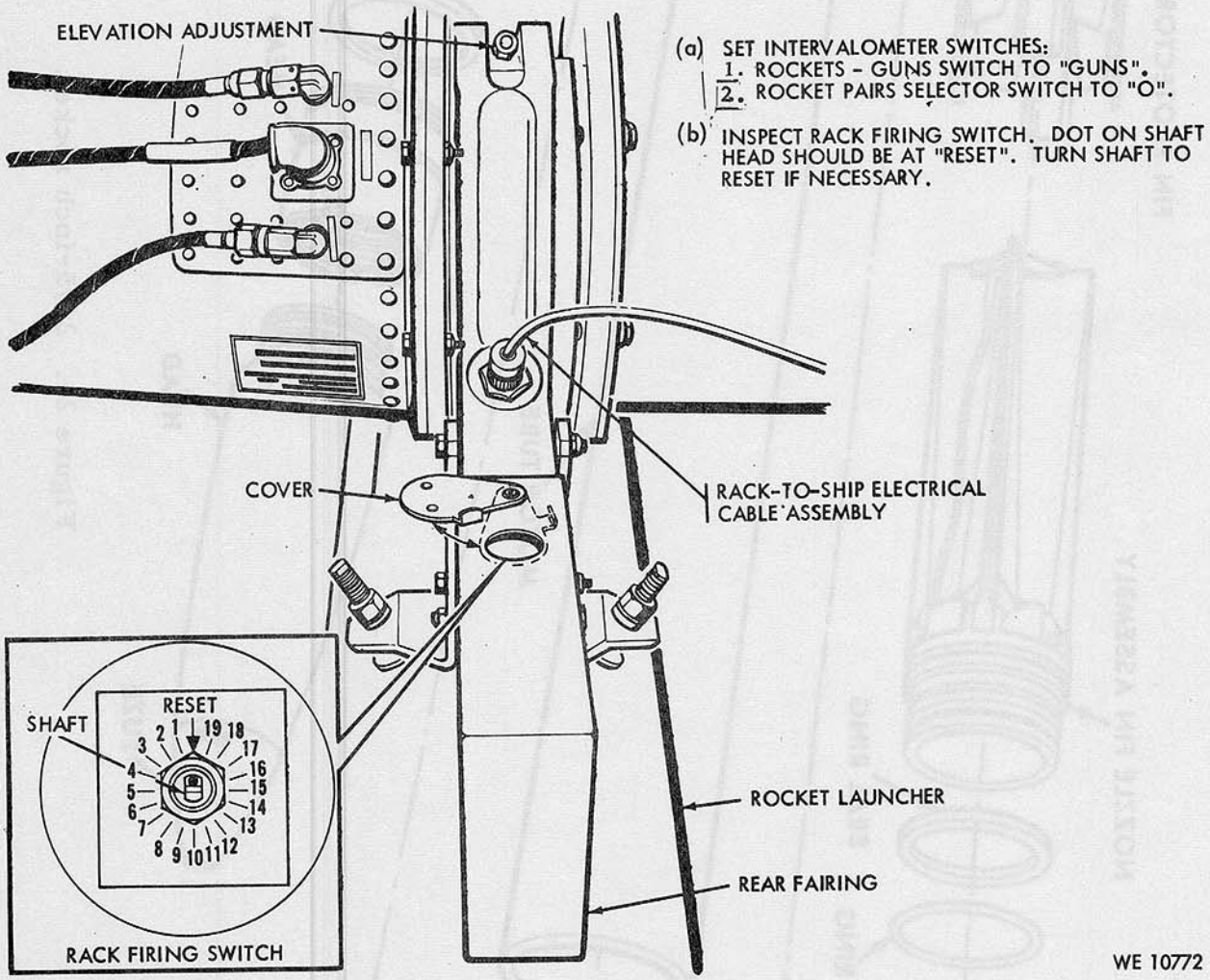

ELEVATION ADJUSTMENT
(a) SET INTERVALOMETER SWITCHES:
1. ROCKETS - GUNS SWITCH TO "GUNS".
2. ROCKET PAIRS SELECTOR SWITCH TO "O".
(b) INSPECT RACK FIRING SWITCH. DOT ON SHAFT HEAD SHOULD BE AT "RESET". TURN SHAFT TO RESET IF NECESSARY.
COVER
RACK-TO-SHIP ELECTRICAL CABLE ASSEMBLY
SHAFT
RESET
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
RACK FIRING SWITCH
ROCKET LAUNCHER
REAR FAIRING
WE 10772

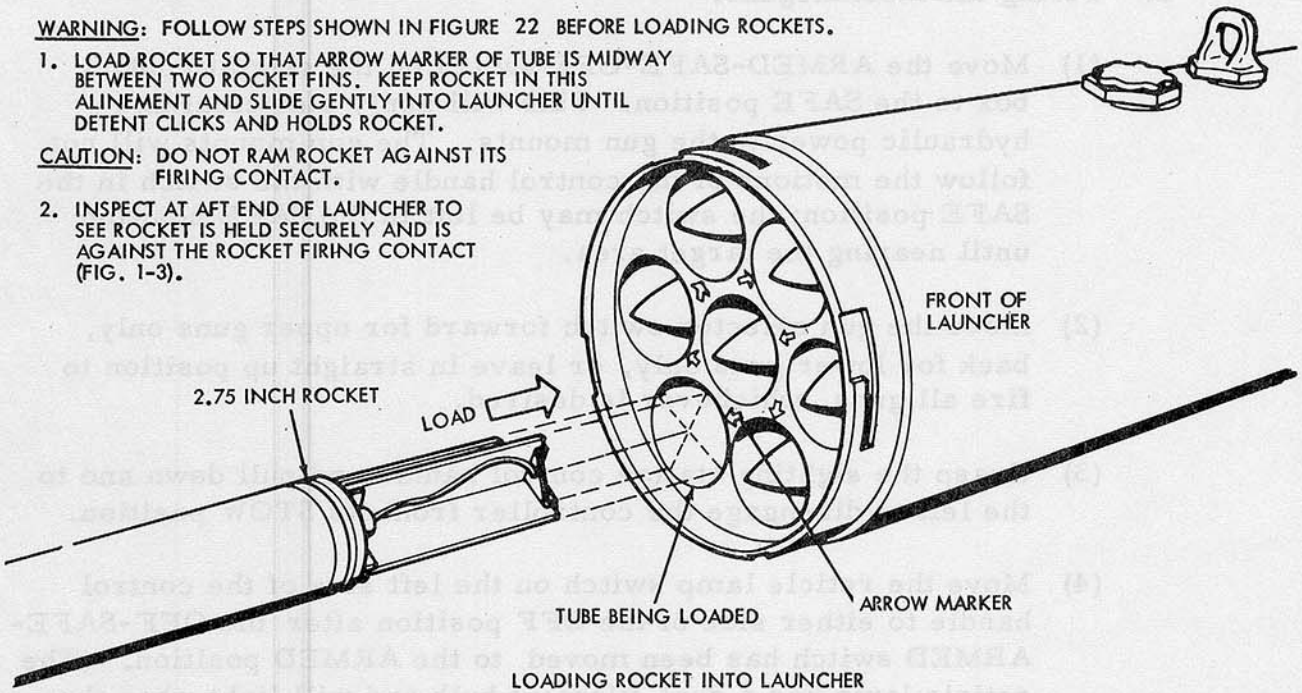
Figure 22. Loading procedure

WARNING: FOLLOW STEPS SHOWN IN FIGURE 22 BEFORE LOADING ROCKETS.

1. LOAD ROCKET SO THAT ARROW MARKER OF TUBE IS MIDWAY BETWEEN TWO ROCKET FINS. KEEP ROCKET IN THIS ALINEMENT AND SLIDE GENTLY INTO LAUNCHER UNTIL DETENT CLICKS AND HOLDS ROCKET.

CAUTION: DO NOT RAM ROCKET AGAINST ITS FIRING CONTACT.

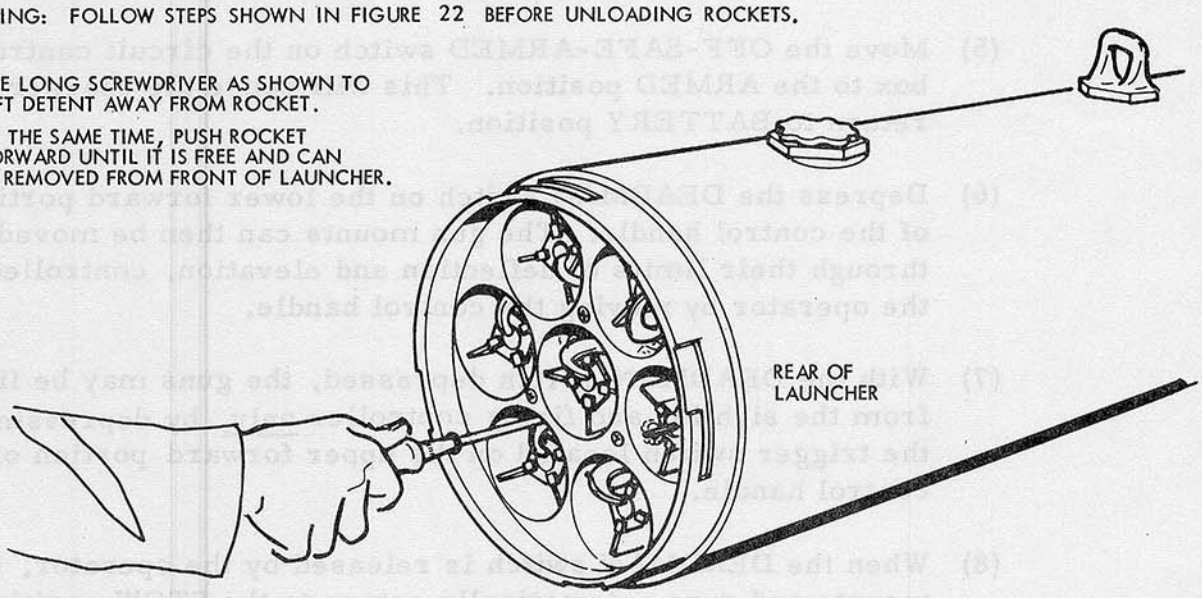
2. INSPECT AT AFT END OF LAUNCHER TO SEE ROCKET IS HELD SECURELY AND IS AGAINST THE ROCKET FIRING CONTACT (FIG. 1-3).



LOADING ROCKET INTO LAUNCHER

WARNING: FOLLOW STEPS SHOWN IN FIGURE 22 BEFORE UNLOADING ROCKETS.

1. USE LONG SCREWDRIVER AS SHOWN TO LIFT DETENT AWAY FROM ROCKET.
2. AT THE SAME TIME, PUSH ROCKET FORWARD UNTIL IT IS FREE AND CAN BE REMOVED FROM FRONT OF LAUNCHER.



UNLOADING ROCKET FROM LAUNCHER

WE 10773

Figure 23. Loading or unloading ammunition.

5. SYSTEM OPERATION.

a. Firing the machineguns.

(1) Move the ARMED-SAFE-OFF switch on the circuit control box to the SAFE position. This will apply electrical and hydraulic power to the gun mounts. The gun mounts will not follow the motions of the control handle with the switch in the SAFE position; the switch may be left in the SAFE position until nearing the target area.

(2) Move the gun selector switch forward for upper guns only, back for lower guns only, or leave in straight up position to fire all guns, whichever is desired.

(3) Grasp the sighting station control handle and pull down and to the left to disengage the controller from its STOW position.

(4) Move the reticle lamp switch on the left side of the control handle to either side of the OFF position after the OFF-SAFE-ARMED switch has been moved to the ARMED position. (The reticle lamp has a dual filament bulb and will light when the switch is moved to either side of the OFF position.)

(5) Move the OFF-SAFE-ARMED switch on the circuit control box to the ARMED position. This will cause the charger to return to BATTERY position.

(6) Depress the DEADMAN switch on the lower forward portion of the control handle. The gun mounts can then be moved through their limits of deflection and elevation, controlled by the operator by moving the control handle.

(7) With the DEADMAN switch depressed, the guns may be fired from the sighting and firing controller only, by depressing the trigger switch located on the upper forward portion of the control handle.

(8) When the DEADMAN switch is released by the operator, the mounts and guns automatically return to the STOW position (0^{o} elevation, 0^{o} deflection). The guns may then be fired by the pilot or copilot by depressing the auxiliary trigger switches on the cyclic sticks. However, the auxiliary trigger switches can be used only when the DEADMAN switch is not depressed. Therefore, dispersion of firepower is controlled by maneuvering the aircraft since the gun mounts remain in the STOW position.

b. Safetying the armament subsystem. To safety the armament subsystem, it is only necessary to place the OFF-SAFE-ARMED switch in the OFF position. This operation closes the main hydraulic shutoff valve and opens all electrical power circuits, thus making the system inoperative. The charger assemblies will still be in the SAFE position; i. e., holding the guns "out-of-battery."

c. Firing the rockets.

(1) In operation, the launchers are loaded from the rear and held locked in place by means of a detent spring and an igniter arm on each tube.

(2) The rockets are electrically fired in pairs, the same numbered tube in each launcher being energized simultaneously by a firing signal originating from the trigger switch on the pilot's or copilot's cyclic stick to the intervalometer, which selects the number of pairs to be fired from 1 through 7.

(3) With the firing selector switch on the intervalometer set on 2.75, either the machineguns or rockets can be fired. However, due to modifications of the M6 control panel, depressing the pilot's or copilot's trigger will take the guns out of the circuit, but once the pilot releases the trigger on the cyclic stick, the guns can be fired from the sighting station. With the switch on the intervalometer set on GUNS, only the machineguns can be fired.

(4) Actual firing voltage supplied to the rocket and launcher is 28 volts DC. The seven cables in the launcher are shielded to prevent stray electromagnetic field firing.

(5) The M4A4 will electrically release the complete launcher assembly operating the launcher jettison switch on the intervalometer control panel, which operates the jettison solenoid. The jettison switch is located on the left side of pedestal console in the cockpit of the intervalometer. Manual release of the launcher is accomplished by means of a manual jettison handle on the right side of the pedestal console.

d. Safetying the launcher.

(1) Turn off all ship power and move the OSA switch to OFF.

(2) Install shorting plug into pod after disconnecting electrical firing cables to safe the rockets on the ground.

6. PREVENTIVE MAINTENANCE.

a. The M6 test set will be used to check all systems pertaining to the gun mount pylons, sighting station, and control box. A test set to check out the rack and launcher is presently under development to help the repairman make voltage checks and locate defective components.

b. Preflight and postflight checks.

(1) Preflight.

(a) Rocket launcher tubes and center contacts. Remove moisture and foreign material. Check for corrosion or other damage. See that center contacts are not bent out of position.

(b) Rocket launcher rack and support assembly. Check for secure attachment or external stores support assembly. See that sway brace pads hold rocket launcher firmly in place.

(c) Rack-to-skin electrical cable assembly. Check for damage and secure connection to helicopter and to rack and support assembly.

(d) Special purpose electrical cable assembly (jumper cable in aft cargo compartment). Check for secure and correct connections.

(e) Infinity sight XM60 and sight mount. Check for proper installation. See that sight mount swivels smoothly from stow position to operating position. Turn reticle light, move rheostat through entire range, and check reticle illumination. Turn sight dial through entire range; check for binding or rough travel.

(f) Intervalometer. See that toggle guard is down over electrical switch.

(g) Electrical check. Move OFF-SAFE-ARM switch to ARM, ROCKETS/GUNS switch to ROCKETS, and ROCKET PAIR SELECTOR switch to 7. Press pilot's or copilot's firing

switch (on cyclic switch) and have observer verify assembly firing switch STEPS to position 7 on each rack support assembly. Press RESET switch, move ROCKETS/GUNS switch to GUNS, and OFF-SAFE-ARM switch to OFF.

(2) Postflight. All components of rocket launcher and rocket launcher mount - clean and lubricate.

c. Immediate action checks.

(1) Rocket launcher tubes and center contacts. Examine rear half of each tube for corrosion. Check for buildup of rocket residue. See that center contacts are not bent or cracked. Check for launcher damage causing inward dents in tubes.

(2) Rocket launcher rack and support assemblies. Remove rocket launcher and check for bent, broken, or damaged parts of rocket support assembly. Examine support portion for cracks. Install rocket launcher.

(3) Rack-to-skin electrical cable assembly. Examine wires near connectors for frayed or damaged insulation.

(4) Special purpose electrical cable assembly - (jumper cable in aft cargo compartment). Check for broken wires.

(5) Infinity sight XM60. Check for damage, a broken beam-splitter, or optical elements.

(6) Intervalometer. Check for secure installation.

(7) Electrical check. Raise toggle guard over JETTISON switch and move switch to ON to determine that rocket launchers will jettison electrically.

Caution. - Support both rocket launchers before checking jettison circuit.

7. PREVENTIVE MAINTENANCE SERVICES.

a. General. Preventive maintenance services are the responsibility of the using organization and are to be performed by the aircraft armament repairman.

b. Cleaning and care.

(1) General. Any special instructions required for cleaning and care of components are contained in the pertinent sections. General instructions are given in (2) and (3) below.

(2) Cleaning instructions.

(a) Powder-fouled parts. Use solvent cleaning compound (CR) to clean all parts that have been exposed to powder fouling during firing.

Note. - This compound is not a lubricant. Parts that require lubrication will be wiped dry and oiled lightly. Do not use drycleaning solvent (SD) (Spec P-S-661A) or mineral spirits paint thinner (TPM) (Spec TT-T-291A) for cleaning powder-fouled parts of the guns.

(b) General usage. Use drycleaning solvent (SD) or mineral spirits paint thinner (TPM) to clean or wash grease or oil from all parts of weapon and mount, with the exception noted in (3)(b) below.

(c) Heavy accumulation. New materiel and component parts received from storage for immediate use may have heavy accumulation of grease. Remove the residue with waste, wiping cloths, or a brush saturated with drycleaning solvent or mineral spirits paint thinner. Dry and lubricate according to specifications. Apply a light grade of general purpose lubricating oil (MIL-L-644A) to all unpainted metal surfaces to prevent rusting.

(3) General precautions in cleaning.

(a) Drycleaning solvent and mineral spirits paint thinner are flammable and should not be used near an open flame. Fire extinguishers should be readily available when these materials are used. In addition, they evaporate quickly and have a drying effect on the skin. If used without gloves, they may cause cracks in the skin and in the case of some individuals a mild irritation or inflammation. Use only in well-ventilated places.

(b) Avoid getting petroleum products, such as solvent cleaning compound, drycleaning solvent, mineral spirits paint thinner, or lubricants, on any electrical components, wiring, plastic, or rubber parts. Clean the external surfaces of the solenoid and buffer assembly with a clean, dry cloth.

(c) The use of diesel fuel oil, gasoline, or benzene (benzol) for cleaning the gun and mount is prohibited.

(d) Store cleaners in a warm place if practical. Do not dilute solvent cleaning compound (CR) or add antifreeze. Shake solvent cleaning compound (CR) well before usage.

c. Basic preventive maintenance. The general preventive maintenance procedures outlined in (1) through (5) below will be observed. Special maintenance of specific components of the materiel is covered in appropriate TM's pertaining to the components.

(1) Rust, dirt, grit, gummed oil, and water cause rapid deterioration of internal mechanisms and outer unpainted surfaces. Particular care should be taken to keep all bearing surfaces clean and properly lubricated. Remove all traces of rust from unpainted bearing surfaces with crocus cloth, which is the coarsest abrasive to be used for this purpose. Burs should be removed with a fine stone.

(2) Loose parts will be tightened.

(3) Check equipment for overall condition and completeness. Missing and damaged items will be replaced and/or repaired.

(4) Serious damage will be reported on DA Form 2407 (Maintenance Request).

(5) Inspect and service the armament subsystem after any extended operation, as the tactical situation permits.

LUBRICATION CHART

ARMAMENT SUBSYSTEM, HELICOPTER, 7.62-MM MACHINE GUN: QUAD, M6 (XM6E3)

Intervals are based on normal operation. Reduce intervals to compensate for abnormal operation and severe conditions or contaminated lubricants. During inactive periods, intervals may be extended commensurate with adequate preservation. Clean parts, other than powder-fouled, with THINNER, PAINT, MINERAL SPIRITS (TPM) or DRY CLEANING SOLVENT (SD). Dry before lubricating.

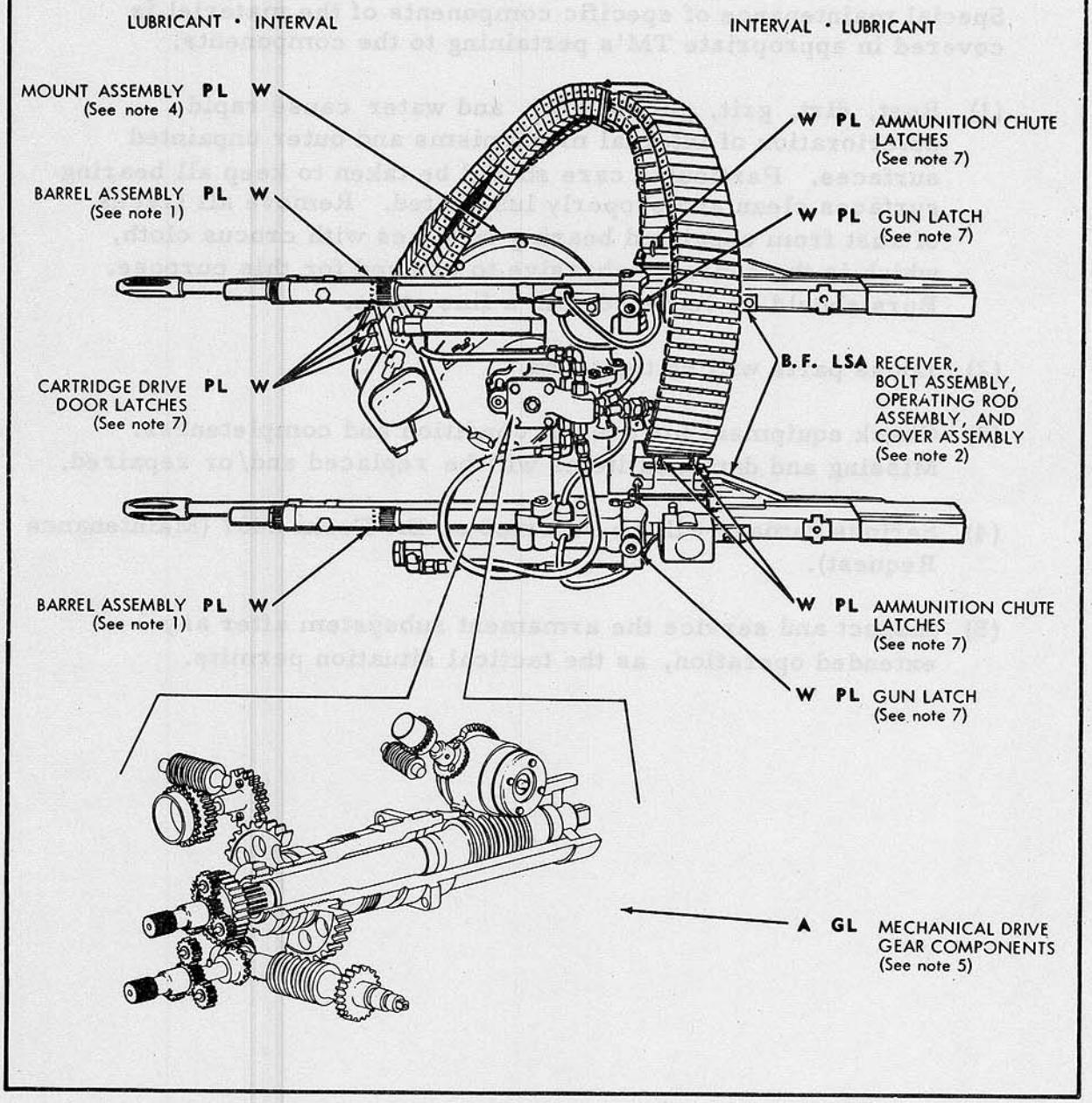

LUBRICANT · INTERVAL
INTERVAL · LUBRICANT
MOUNT ASSEMBLY PL W (See note 4)
BARREL ASSEMBLY PL W (See note 1)
CARTRIDGE DRIVE DOOR LATCHES PL W (See note 7)
BARREL ASSEMBLY PL W (See note 1)
W PL AMMUNITION CHUTE LATCHES (See note 7)
W PL GUN LATCH (See note 7)
B. F. LSA RECEIVER, BOLT ASSEMBLY, OPERATING ROD ASSEMBLY, AND COVER ASSEMBLY (See note 2)
W PL AMMUNITION CHUTE LATCHES (See note 7)
W PL GUN LATCH (See note 7)
A GL MECHANICAL DRIVE GEAR COMPONENTS (See note 5)

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Figure 24. Lubrication chart.

KEY

LUBRICANTS	EXPECTED TEMPERATURES			FOR ARCTIC OPERATIONS REFER TO TM 9-207	INTERVALS
	ABOVE +32° F.	+40° F. TO -10° F.	0° F. TO -65° F.		
CR - CLEANING COMPOUND, SOLVENT	ALL TEMPERATURES				**B. F.** - BEFORE FIRING
PL - LUBRICATING OIL, GENERAL PURPOSE	**PL** (SPECIAL)	**PL** (SPECIAL)			**W** - WEEKLY
LAW - LUBRICATING OIL, WEAPONS			**LAW**		**A** - ANNUALLY
LSA - LUBRICATING OIL, SEMI-FLUID	**LSA**	**LSA**	**LSA**		
GL - GREASE, AIRCRAFT AND INSTRUMENT	**GL**	**GL**	**GL**		

NOTES

1. BARREL ASSEMBLY - Immediately after firing, clean all powder-fouled surfaces with CR. Wipe dry and lightly coat with PL special or LAW. Wipe dry and remove oil from bore and chamber before firing.

2. RECEIVER, BOLT ASSEMBLY, OPERATING ROD ASSEMBLY, AND COVER ASSEMBLY - Before firing, clean with SD or TPM. Wipe dry and lightly coat sliding surfaces of receiver rails, the bolt cam actuator roller, bearing surfaces of firing pin, firing pin spring, operating rod roller and yoke bearing surface, and camming channel of cover assembly with LSA. After firing, clean with SD or TPM and lightly lubricate above components with PL special or LAW. Wipe dry and oil with PL special or LAW during inactive periods.

3. REMAINING COMPONENTS OF GUN - Clean with SD or TPM. Wipe dry and lightly coat with PL special or LAW. Thereafter, clean and oil as above every 90 days unless inspection reveals shorter intervals are required.

4. MOUNT ASSEMBLY - Immediately after firing, clean powder-fouled surfaces with CR. Clean remaining surfaces with SD or TPM. Wipe dry and lightly lubricate with PL special or LAW. Thereafter, weekly, clean and oil all moving parts, as above, unless inspection reveals shorter intervals are required.

5. DISASSEMBLED FOR LUBRICATION BY ORDNANCE MAINTENANCE PERSONNEL - Clean with SD or TPM, wipe dry, and apply GL to all working and bearing surfaces of mechanical drive gear components.

6. LUBRICATED AT TIME OF DISASSEMBLY BY ORDNANCE MAINTENANCE PERSONNEL - Apply GL to internal components of sighting station.

7. OIL CAN POINTS - Lubricate weekly. Use PL special for temperatures above 0 degree F.; for temperatures below 0 degrees F., use LAW.

Figure 24. Lubrication chart—continued.

LUBRICATION CHART

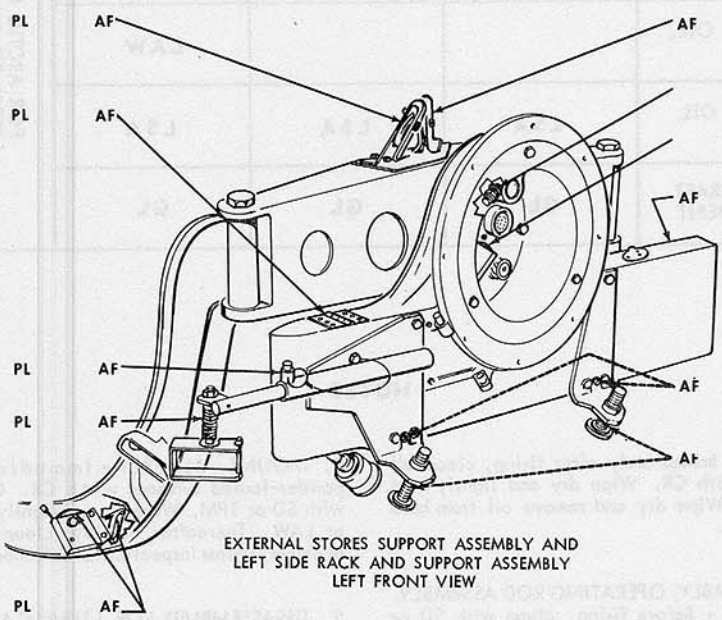
ARMAMENT SUBSYSTEM, HELICOPTER, 7.62-MILLIMETER MACHINE GUN – 2.75 -INCH ROCKET LAUNCHER : XM16

Intervals are based on normal operation. Reduce intervals to compensate for abnormal operation and severe conditions or contaminated lubricants. During inactive periods, intervals may be extended commensurate with adequate preservation.

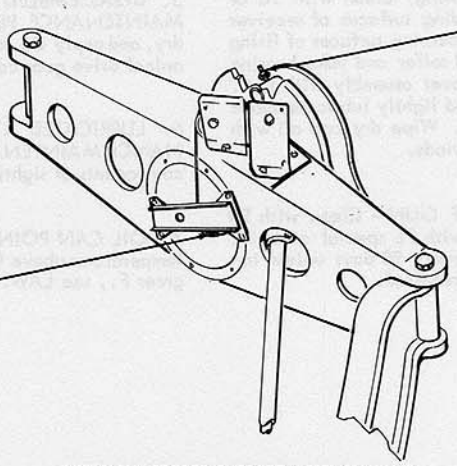
Clean parts, other than powder- or rocket-residue-fouled, with THINNER, PAINT, MINERAL SPIRITS (TPM), or DRY CLEANING SOLVENT (SD). Dry before lubricating.

LUBRICANT	INTERVAL
Pulley (See note 3)	PL AF
Hinge (See note 3)	PL AF
FOLD	
Pin (See note 3)	PL AF
Screw (See note 3)	PL AF
Pulley (See note 3)	PL AF
Pulley (See note 3)	PL AF

INTERVAL	LUBRICANT
PL AF	Pulley (See note 3)
PL AF	Washer (See note 4)
PL AF	Pulley (See note 4)
AF	Rack And Support Assembly (See note 3)
FOLD	
PL AF	Screws (See note 3)
PL AF	Pads (See note 3)
PL AF	Screw (See note 3)



EXTERNAL STORES SUPPORT ASSEMBLY AND LEFT SIDE RACK AND SUPPORT ASSEMBLY LEFT FRONT VIEW



EXTERNAL STORES SUPPORT ASSEMBLY AND LEFT SIDE RACK AND SUPPORT ASSEMBLY RIGHT FRONT VIEW

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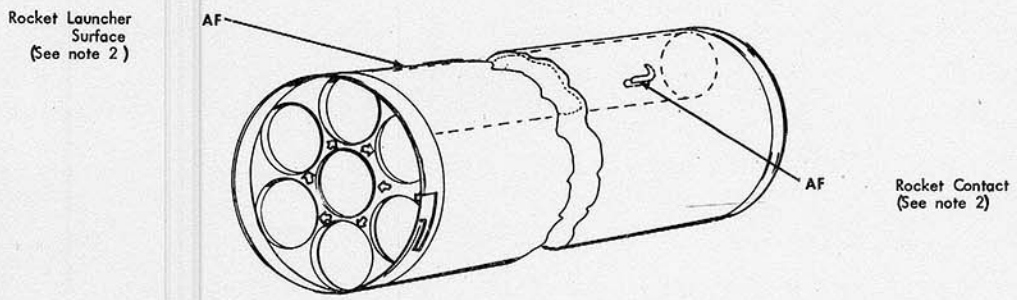
Figure 25. Lubrication chart.

LUBRICANT · INTERVAL

INTERVAL : LUBRICANT



ROCKET LAUNCHER XM157

- KEY -

LUBRICANTS	EXPECTED TEMPERATURES			FOR ARCTIC OPERATIONS refer to TM 9-207	INTERVALS
CR - CLEANING COMPOUND, solvent	ALL TEMPERATURES				AF - After firing
PL - LUBRICATING OIL, weapons	PL (Special)	PL (Special)	LAW		
LAW - LUBRICATING OIL, general purpose	Replaces PL (Special) at low temperatures				

FOLD

FOLD

- NOTES -

1. **MACHINE GUNS AND MOUNT** - Refer to LO9-1005-243-12.

2. **ROCKET LAUNCHER** - After firing, clean launcher tubes with CR and wipe outside surfaces of launcher and rocket contacts with a cloth moistened with CR. Wipe dry.

3. **RACK AND SUPPORT ASSEMBLY** - After firing, clean external sufaces and external pulleys, screws, pads, pin, and hinge with a cloth moistened with CR. Wipe dry and lubricate with PL Special. During inactive periods of more than 7 days or as local conditions dictate, clean with TPM or SD, wipe dry, and lubricate with PL Special.

4. **LUBRICATE AT TIME OF REMOVAL OF MACHINE GUN MOUNT ASSEMBLY** - Clean pulley and washer with a cloth moistened with TPM or SD, wipe dry, and lubricate with PL Special.

5. **DO NOT LUBRICATE** - Internal surfaces of rocket launcher tubes; bomb rack MA-4A.

WE 10775

Figure 25. Lubrication chart—continued.